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ABSTRACT

The CREED 4 Project, the fourth of a continuing series, had as its objective the development of activities and materials for the remediation of deficits found in deaf children (ages 4-8 years) with special learning problems and who had been administered the battery of tests developed in CREED 3, designed to assess five critical areas. A sample of 22 classes from the 11 schools for the deaf in New York State participated in the project. Both typical and learning disabled deaf children were included. Instructional procedures and materials were selected for the five skill areas of gross motor coordination, sensory-motor integration, visual analysis, attention and memory, and conceptualization. Sequential levels of instruction were developed, as was a teacher's guide. The program was subjected to pilot trial in the field and then evaluated by the administration of the CREED 3 Test Battery to participating classes, and by rating forms, written narratives, and discussion frcm both teachers and observers. Included are the evaluation results, on the basis of which recommendations are made for program modifications related to the variables of interest, level of mastery, validity of sequence, relevance, and practicality. (KW)

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CURRICULUM DEVELOPMENT FOR YOUNG DEAF CHILDREN WITH SPECIFIC LEARNING DISABILITIES (AGES 4-8)

PROJECT CREED 4

(Cooperative Research Endeavors in Education of the Deaf)

E.S.E.A. - Title I

P.L. 89-313

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Division for Handicapped Children

The State Education Department

Albany, N. Y. 12224

1970

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New York School for the Deaf
White Plains, New York

New York State School for the Deaf
Rome, New York

Rochester School for the Deaf
Rochester, New York

St. Francis de Sales School
for the Deaf
Brooklyn, New York

St. Joseph's School for the Deaf
Bronx, New York

St. Mary's School for the Deaf
Buffalo, New York

Nassau Day Classes for Deaf Children
Westbury, New York

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Lake Ronkonkoma, New York

School for the Deaf
Junior High School #47
New York, New York

School for Language and Hearing
Impaired Children
New York, New York

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CURRICULUM DEVELOPMENT FOR YOUNG DEAF CHILDREN WITH SPECIFIC LEARNING DISABILITIES
(Ages 4 - 8 in New York State)

Lillian C. R. Restaino, Ph.D., Principal Investigator
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PROJECT CREED 4

September 1969 - August 1970

TITLE I ESEA
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Division for Handicapped Children
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Albany, N.Y. 12224

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PREFACE

A major goal of the CREED program of the past four years has been met with the publication of the present volume, CREED 4. That is, we have begun to develop a remediation program for the special deaf child in the five skill areas clearly indicated in a previous phase (CREED 3) as needing remedial procedures if this child is to make progress in school learning.

It is but a beginning. CREED 5, presently in process, aims to present a systematic sequence of behavioral objectives - subordinate to general instructional goals - which would extend the foundation of CREED 4 into a more fully articulated curriculum for deaf children with learning disabilities. This will be published in late 1971.

Our gratitude is extended to all those who participated in the program, but primarily to teachers and children without whose helpful cooperation the entire project would have gained us nothing.

Frances Cronin

Chapter I

Introduction

Foundations of CREED 4

1. The Relationship Between Assessment and Instruction

The projects entitled Cooperative Research Endeavors for the Education of the Deaf: (CREED), sponsored jointly by the Division for Handicapped Children, State Education Department of New York, and eleven schools for the deaf in New York State, from 1967 to date, have had as their expressed goal the improvement of instruction for deaf children with special learning problems. It has been the strong belief of the CREED research staff that such a goal may best be fulfilled through an instructional program similar to those described by Lindvall and Cox (1970), Bloom (1968) and Carroll (1963). Each of these educational theorist-practitioners proposes an approach to education that demands one fundamental requisite--an intensive, immediate relationship between diagnosis and instruction.

It has become abundantly clear that progress in learning can take place only when we provide the teacher with a continuous source of information about the achievements of the child with whom she is working, a progress record that is directly related to the specific content of her instructional program. In other words, we must restrict assessments to those facets of instruction that are of practical importance to the classroom learning of the child, and we must provide the teacher with such assessments of the child's progress systematically at sequential levels within the program.

In order to develop such a program and to implement it successfully, we must first make a radical change in our interpretation and use of the principles of assessment and learning. We must view the objective of assessment as the description of the level at which certain instructional procedures are indicated. In other words, the child's score is used to indicate to the teacher where in her instructional program she is to begin work with him. Scores then are not used as <u>normative</u> data; in fact, norms are totally useless as <u>instructional tools</u> for the teacher. They provide her with interesting demographic information, but comparing an individual child's score with a normative group is essentially useless to the teacher or the child in effecting instruction progress. As Lindvall and Cox state:

> The information that a pupil has a grade equivalent of 3.5 years, or that he ranks tenth in his class when compared with other pupils, is not sufficient for the planning of individual programs. What is needed are measures that indicate how well pupil proficiency corresponds to some desired criterion rather than measures which provide only a ranking of pupils in relation to each other. (pp. 15-16, 1970)

Similarly, we must view learning (i.e., the mastery of the content of classroom instruction) as a function not of comparative differences in ability, but as a function of differences in time. Both Carroll and Shulman (1963) have proposed that we look anew upon the concept of mastery. Shulman states:

> Our traditional conceptions of readiness happen to fit nicely with the institutionalized tempo of our school systems. In education we characteristically

> treat time as a constant while allowing achievement to act as a variable.
>
> Our purposes in education are to see to it that a certain minimal level of competence is achieve by each learner. To do so, we should logically set levels of achievement as constants and let time act as a variable. (p. 49, 1970)

Carroll has long been the adherent of such an interpretation of aptitude. He has defined aptitude as "the amount of time required by the learner to attain mastery of a learning task." (1963)

While the concept of mastery as a function of time is not necessarily related to the concept of assessment as individual prescription, they are, in combination, formidable, and can form the basis for a superior program of instruction that recognizes the wide variation in abilities in one classroom. Such a program confronts the problem of such variation through a comprehensive description of each child's abilities and disabilities and through a recommended set of experiences specifically designed for him.

If educators sincerely accept their responsibility for teaching all children, then clearly we must encourage the development of programs which not only provide the teacher with specific descriptions of a child's problems, but provide as well procedures and materials to help solve them. When the CREED sponsors decided to follow the construction of the CREED 3 Test Battery with a more systematic development of procedures to aid in the remediation of the deficiencies uncovered, the CREED Research staff approached the project with the expectation that eventually the Test Battery and the

remediation procedures could be developed into a program of instruction specific to the unique needs of each child. They view the activities in CREED 4 as an essential first step in that direction.

2. The Relationship Between CREED 3 Test Battery and CREED 4

It is quite possible that the project described here, the fourth of a series, may be considered apart from its predecessors; it is better evaluated, however, as one part of the sequence of on-going CREED projects, which, as stated above, have been undertaken to provide aid for the educator of the deaf child with special learning disabilities.

The specific objective of the CREED 4 project is the development of activities and materials for the remediation of deficits found in deaf children with special learning problems who had been administered the battery of tests developed in CREED 3. The CREED 3 Test Battery was devised as an assessment tool to be administered by teachers in order to provide them with information about their children in five skill areas. The skill areas evaluated were those judged by teachers of the deaf to be critical to the successful instruction of the deaf child with special learning disabilities.

In 1968-1969, all children between the ages of 3 and 9 in eleven schools for the deaf in New York State were administered the CREED 3 Test Battery. These children were

divided into two groups: those designated by the respective school personnel as "typically deaf" and those seen as deaf with "special learning problems." The test results Tables 1 through 3, see pages 8 through 10) provided very strong confirmation that there are large numbers of children in these schools for the deaf who present learning problems very different from those confronting educators of the deaf in the past.

Children who were designated as those with special learning problems were significantly poorer in performance in all five skill areas than those termed typical. Both special and typical groups increased in score with age, but special children increased at a slower rate than did the typical children. The gap between performance levels of the two groups increased with age; i.e., the differences between the two groups became greater as a function of increasing age.

The results of the CREED 3 Test Battery have provided educators of the deaf with a statistical description of the learning deficiencies of their children and the CREED Research staff with a convincing argument for the refinement of the test battery into a standardized assessment tool. The primary objective of the initial phases of CREED, however, is not assessment; it is the improvement of instruction for the deaf child with special learning problems. It must be remembered that the CREED 3 Test Battery was developed in order to provide more precise descriptions of learning deficits in deaf children, for the expressed purpose of improving remediation procedures.

In other words, it was believed that greater specificity in describing deficiencies would provide the opportunity to apply remediation procedures appropriate to the greatly differing needs of individual children. It was expected that the teacher would use the test battery to determine in which of the five skill areas a child needed help; she would then direct special efforts to these deficiencies.

Toward fulfillment of this general objective, CREED 3 culminated with the consideration of the results by three educational specialists (Dr. Ray Barsch, Dr. Margaret Shepherd and Dr. Gloria Wolinsky) and the presentation to educators of the deaf of their recommendations for remediation. The seminars held for this purpose provided invaluable information for immediate implementation by the participating educators in their classrooms. The success of the seminars encouraged the CREED sponsors to propose that attention be directed to the systematic development of procedures for remediation of the deficiencies found in the sample of children tested in CREED 3. Thus, the seminars were equally important to the CREED Research staff for the cataloging of information into their growing fund of remedial procedures and materials for the subsequent CREED 4.

It should be apparent from the above discussion that the activities in the current project are a direct function of those in CREED 3; it is only on a chronological basis that they may be treated as separate entities. In moving toward

fulfillment of the over-all goal, each CREED project is developed to meet specific objectives. Because CREED 4 is more a development than a research phase, its objectives were limited to the following:

1. The accumulation and evaluation of instructional procedures and materials in the five skill areas of gross-motor coordination, sensory-motor integration, visual analysis, attention and memory, and conceptualization.

2. The selection of materials and procedures appropriate to the sample of skills measured by the CREED 3 Test Battery.

3. The sequencing of the instructional procedures and materials based upon theoretical descriptions of processes of child development.

4. The evaluation of the use of the instructional materials and procedures by participating teachers and neutral observers on the basis of: age of child; interest; level of mastery; validity of sequence; relevance, and practicality.

TABLE 1

Means, Standard Deviations and F Values
for Special vs. Typical Children of 3-4 Years of Age
CREED 3 (1968-1969)

Test	Special (N=112)		Typical (N=332)		F
	Mean	S.D.	Mean	S.D.	
Gross Motor	3.00	1.31	3.66	1.17	15.79**
VMI	4.72	1.89	5.20	1.58	3.22
Knox Cubes	1.78	2.22	3.32	2.84	13.84**
Mannequin	4.27	1.44	4.66	1.04	4.07*
Concept Test - Concept Score	5.26	6.06	5.46	5.79	.01
Concept Test - Association Score	2.04	2.31	2.25	2.22	.76
Association Test	3.92	2.95	4.98	2.78	4.89*
Form Copying	13.47	2.96	12.02	3.47	7.40**
DLM	2.18	2.30	2.40	2.25	.27
Shell Game	1.74	1.13	1.92	1.10	1.63
Matching Color Cubes	.79	.40	.91	.29	8.65**
Matching Forms	1.83	.46	1.85	.43	.04

*$F_{.05}=3.86$

**$F_{.01}=6.70$

TABLE 2

Means, Standard Deviations and F Values
for Special vs. Typical Children of 5-6 Years of Age
CREED 3 (1968-1969)

Test	Special (N=65)		Typical (N=162)		F
	Mean	S.D.	Mean	S.D.	
Gross Motor	4.17	1.61	4.92	1.53	7.25**
VMI	5.74	1.18	6.32	.83	10.77**
Knox Cubes	4.78	3.08	7.32	3.58	8.89**
Mannequin	4.88	.67	4.90	.60	.39
Concept Test - Concept Score	5.27	4.98	7.12	5.29	2.96
Concept Test - Association Score	3.25	2.86	3.91	2.56	.49
Association Test	5.72	3.04	7.64	1.77	22.48**
Form Copying	7.03	3.69	4.76	3.19	10.79**
See Quees	3.31	2.77	4.85	3.87	1.64
Target Test	4.60	2.98	7.01	2.69	21.45**
PSS	4.26	1.91	5.57	2.15	11.26**
Frostig I	3.85	2.61	4.98	2.47	2.77
Frostig V	2.28	2.01	3.96	2.16	14.08**
Gibson Transformations	128.60	45.94	140.46	22.39	2.47
Visual Discrimination	5.05	3.00	6.68	2.93	6.72**
Seriation	.22	.41	.36	.48	1.68

*$F_{.05}=3.86$
**$F_{.01}=6.70$

TABLE 3

Means and Standard Deviations and F Values
for Special vs. Typical Children of 7-8 Years of Age
CREED 3 (1968-1969)

Test	Special (N=86)		Typical (N=203)		F
	Mean	S.D.	Mean	S.D.	
Gross Motor	5.35	1.51	6.14	1.15	17.97**
VMI	5.58	.71	5.83	.48	7.55**
Knox Cubes	7.43	4.34	10.66	3.60	32.32**
Mannequin	4.88	.44	4.95	.41	2.19
Concept Test - Concept Score	7.05	5.61	6.95	5.84	.001
Concept Test - Association Score	4.65	2.90	5.89	3.04	6.92**
Association Test	7.66	2.29	8.63	1.25	17.41**
Form Copying	4.53	3.44	2.14	2.14	39.09**
See Quees	5.65	4.22	9.07	4.50	25.97**
Target Test	7.23	2.88	8.60	1.94	21.83**
PSS	5.55	2.24	6.83	1.99	19.80**
Frostig I	6.26	2.71	6.69	2.54	.71
Frostig V	4.93	1.91	6.13	1.25	32.87**
Gibson Transformations	136.74	35.51	154.20	11.16	34.86**
Visual Discrimination	6.92	3.00	8.45	2.65	15.99**
Seriation	.42	.49	.80	.40	33.08**

*$F_{.05}=3.86$
**$F_{.01}=6.70$

Chapter II

Methods

A. Subjects

The children who were selected to participate were a sample of twenty-two classes out of the larger population of deaf children in eleven schools for the deaf in New York State. In recognition of the problems confronting them in the implementation of the program, administrators were required to select two classes for participation, at least one of which consisted of special deaf children. Table 4, page 29, presents the total number of children participating in the field trial of the program.

B. Procedures

1. Selection of Instructional Procedures and Materials

In order to find available educational methods and materials that might be adapted for inclusion in the program, a variety of sources were explored. These sources included professional journals and texts, commercial educational supply firms and governmental agencies.

The New York State Regional Special Education Instructional Materials Center at Hunter College provided an introduction to a wide range of currently available materials, instructional manuals, professional texts, and program reports.

Professional publications provided suggestions for activities, and also served as the impetus for the generation of additional learning activities. Among the texts consulted were those by Evelyn Sharp, Keith Beery, Betty Van Witsen, Newell Kephart, Ray Barsch, Hortense Barry and Robert E. Valett.

Many of the activities used in the CREED program made use of materials purchased from educational suppliers.

Since ready-made materials were not available for many of the activities, CREED's staff collaborated with printing and craft specialists to carry out project designs.

2. Development of Sequential Levels.

The selection of matching procedures and/or materials for a skill area covered in the Test Battery proved to be a formidable task. The problem confronting the CREED staff was that, while we are, in fact, considering each test as one for criterion-reference with the intention of bringing the child to the level of its final mastery,/ the skill areas covered are such that a test of one must necessarily involve some level of another. For example, the criterion test of "Sensory-Motor Integration: Form-Copying" must necessarily involve mastery at some level of Visual Analysis. As described in the CREED 3 Report (1969) the CREED staff used a theoretical hierarchical sequence in the development of the CREED 3 Test Battery. Until more intensive work is done with the battery as it stands, however, it must be considered at a preliminary level of articulation. Each test, then, consists of underlying skills other than the major one under which it is categorized. It is reasonable to assume, therefore, that systematic instruction in one skill may lead to improvement in another skill. However, until a controlled study is carried out for the evaluation of the inter-relationship among the skills and the instructional procedures, we can not hope to predict the extent of the effect

of the relationship.

In this study, the CREED staff classified instructional procedures and material and specific tests on the basis of the greatest overlap of hypothesized underlying skills.

Because of the large number of elements in the program, it is possible to present only a brief description in this report.

a. GROSS MOTOR

The Gross Motor activities are designed to give the child who demonstrated difficulty in this area increased experiences in gross physical movement and to provide opportunities for the child to further develop the larger muscle groups.

The activities are divided into four main areas: Jumping, Balancing, Throwing, and Rhythmic Movement. A sequence of suggested activities is provided for each of these areas.

Jumping included: jumping to the floor from a raised platform; jumping forwards, backwards and sideways as a free movement in space; along a line and from one confined space to another; over a raised obstacle, and jumping in a rhythmical pattern.

Balancing activities included: hopping forwards, backwards and sideways freely in space; along a line; from one confined space to another, and over raised obstacles.

For those children who performed poorly on tests of eye-hand coordination, throwing activities were included.

Some of the activities were: throwing a bean bag from a stationary position at a target located on the wall, on the floor, or directly beneath the child. At a more complex level, the factor of locomotion was added.

A wire whisk and an egg beater were used for the development of continuous rhythmical movement. The activities included: beating colored soap flakes and water; making instant pudding, and whipping cream.

b. ATTENTION

For children who demonstrated short attention spans, the following series of activities are designed to develop the ability to attend to relevant stimuli in the educational environment for increasingly longer periods of time.

Included in the activities were: the identification of briefly illuminated colors and pictures and sequences of colors and pictures; attending and responding to the focal point of an illuminated beam until the beam fell within a specified target area, and attending and responding to a series of cards (pictures, letters, patterns) until a previously specified stimulus appeared.

c. MEMORY

These tasks were designed to increase the child's short-term memory span. Children were asked to recall a missing object that had been removed from a displayed series and later to replace it in the original sequence and array of different types of manipulative materials. Three-dimensional

toys, colorful pictures, beads having two attributes (color and shape) and geometric forms having three attributes (color, shape and size) were used as stimuli. The children were given practice in reproducing a sequence of colored cubes placed vertically within a tube and in remembering the location of stimuli (beads and M & M's) beneath an array of covers that remained in a stationary position in space.

d. VISUAL ANALYSIS

In order to give additional practice to the child who demonstrated difficulty in the analysis of visual stimuli and to teach him how to formulate strategies for making visual discriminations, several basic tasks were devised. The activities included matching a standard presented either above or to the left of several choices. The number of choices from which the stimuli identical to the standard was chosen varied from two to ten.

The stimuli consisted of: three-dimensional objects and two-dimensional geometric forms that varied in color, size and shape; pictures; printed geometric forms, and single alphabet letters. Both the alphabet letter series and the geometric form series were presented in consumable individual booklets. The decoys for the series of printed geometric forms were specific distortions broken figures, straight lines changed to curved lines, and rotations in space . The decoys for the alphabet letters were other letters that closely resembled the standard.

e. SENSORY-MOTOR INTEGRATION

The aim of the Sensory-Motor Integration activities was to develop tactile body awareness, fine motor coordination with direct finger manipulation of small objects, and pre-writing manipulation activities requiring the use of a pencil or crayon.

Activities of direct manipulation included: stringing beads; punching holes with a single-hole punch; under-and-over and overhand lacing, and matching and joining nuts and bolts of various sizes.

Paper and pencil or crayon activities included drawing lines within pre-drawn channels. Straight, curved and complex channels were provided in three widths -- one-inch, $\frac{1}{2}$-inch and $\frac{1}{4}$-inch. A series of patterns to give practice in drawing lines from one beginning point through intermediate points to an end, were also used. The points to be connected with both straight and curved lines were 1 inch, 2 inches and 6 inches apart.

f. CONCEPTUALIZATION

A series of activities was devised for the development of oonceptual thinking. These were divided into three main areas: Association, Seriation and Classification.

The exercises in Association directed the child to group three-dimensional objects and, later, pictures on the basis of contiguity and similarity (i.e., fireman + fire engine, rocketship + astronaut).

Within Seriation the activities required that the child: order a series of three-dimensional objects, two-dimensional geometric shapes (circles and rectangular strips), and pictures, according to size; and that he order sequences based on patterns of color and shape (e.g., 2 reds, 2 blues, 2 reds, 2 blues; or 2 ovals, 1 triangle, 2 ovals, 1 triangle.)

The classification tasks required that the child: complete matrices where the variables were size, color and shape; group three-dimensional items on the basis of two attributes (color and size) and three attributes (color, size and shape), and group three-dimensional objects and, later, pictures on the basis of an inclusive classification (e.g., all cups, all houses, all birds).

3. The Development of the Teacher's Guide

In designing a Teacher's Guide to accompany the program, the CREED 4 staff sought to fulfill two objectives: the comprehensive description of procedures and materials in the five skill areas; and the explication of fundamental principles of learning and child development upon which the program is based. The time period of CREED 4 did not permit the appropriate development of both objectives. Upon consideration of the priorities involved, the CREED staff decided that the materials and procedures would be tried with greater confidence on the part of the teachers if they were provided with the fullest presentation of recommended instructions. Thus, we concentrated our efforts upon the

development of the first objective; the second was treated to only the briefest of discussions.

Despite this compromise, the staff feels very strongly that teachers should not be expected to implement this or any other program without a clear understanding of the theoretical foundations upon which the program is based. It is our hope that in future projects we will be afforded the opportunity to provide teachers with the background appropriate to the optimal implementation of a program.

The instructions as developed in the Teacher's Guide attempted to meet two objectives: first, to provide a comprehensive description of <u>one</u> method of using specific materials at specific sequential levels; and second, to implement in these descriptions certain principles of learning and child development.

Examples from the Guide might better demonstrate the attempt made to fulfill these objectives:

VISUAL DISCRIMINATION

General Purpose

> In order to function at any level, children, and most especially deaf children, must master the skill of visual discrimination of the elements in their environment. We require the child to develop this skill of <u>reducing visual information</u> for processing rapidly and <u>efficiently</u> with little direction as well as little attention to increasing levels of complexity.

CREED 4 personnel have sought to implement a

sequence of increasing complexity in the activities presented here, and to encourage a strategy on the part of the teachers in directing the child's attention to the critical elements of the figures presented.

Activities

1. Three dimensional forms.

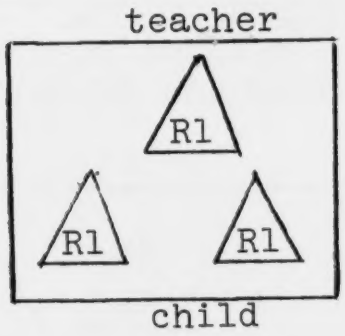
   Materials:

squares	(4 sizes)
triangles	(4 sizes)
ovals	(4 sizes)
circles	(4 sizes)

   4 of each of the above forms in the following colors: red, green, blue, yellow.

The child will be required to discriminate between objects that differ in:

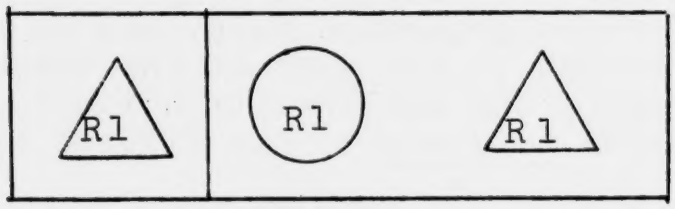
a. Form - Present standard (item to be matched) one correct match and one incorrect match in same color and same size as shown in diagram.



SAY: "Find the same one."

When child selects correct one, nod "yes" and direct his attention to elements of similarity between matching items and elements of difference between those items not matching.

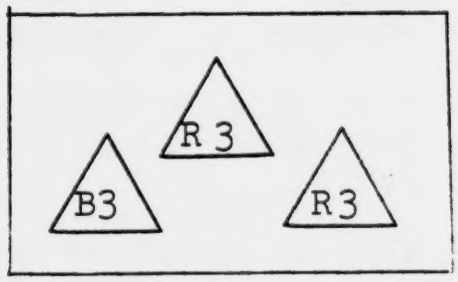
Select similar tasks. Vary the mode of presentation as follows:



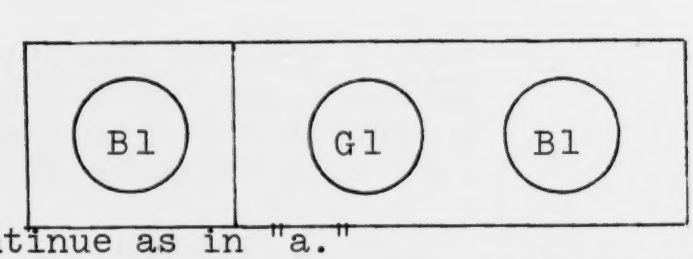
When child masters above, increase the number of choices to 3-4-5.

b. Color - Present incorrect matches in SAME FORM and SAME SIZE, varying color only.

e.g.



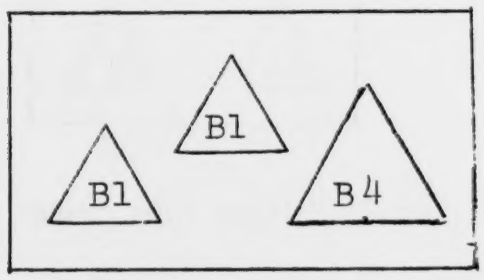
e.g.



Continue as in "a."

c. Size - Present incorrect matches in SAME FORM and COLOR, varying size only.

e.g.



Continue as in "a."

When child is able to match correctly on basis of FORM, COLOR and SIZE at least 3 times, continue with "2."

MEMORY

General Purpose

While we may help the child to master the processes of discrimination and classification, if we do not

also help him to store the content and strategies we teach him, we are failing him.

The goals of the activities presented here are to increase short-term memory skills. Short-term memory processing is a critical preliminary to long-term encoding, if content is lost in this preliminary stage, it will never get the chance to become a permanent part of the child's structure of knowledge. As the child masters each task, decrease the time you permit him to view the samples.

Activities

Recall of a Sequence of Forms: Change in Location

Materials: Classification Forms

Activities:

1. Place forms in pattern 1a.
   Direct child's attention to each element in pattern.
   Ask child to turn around.
   Change Pattern 1a to Pattern 1b.
   Ask child to turn back.
   SAY AND GESTURE: "I moved something. Put it back the way it was."
   If child does not remember, place forms again in Pattern 1a.

   Repeat procedure from beginning.

   Patterns: Change in Location (SHAPE only)
   Patterns: Change in Location (COLOR only)
   Patterns: Change in Location (COLOR and SHAPE)

   Continue with pattern changes of your own design.

In the above examples, a brief general statement of purpose is presented to give the teacher some understanding of the reasoning behind the selection of tasks. In addition, the instructions provide her with one possible procedure for training the skill under consideration at one level of its sequence. The Guide is considered a foundation; it is a

preliminary proposal for the teacher's implementation of the program. It was the expectation of the CREED 4 staff that through the evaluation of teachers and neutral observers, changes would be effected to make it a more appropriate and effective tool. For a complete list of activities included in the CREED 4 Teacher's Guide see Appendix A, pgs. 124 thru 126.

4. The Evaluation of the Program

In the project proposal for CREED 4, it was emphasized that a program must be subjected to pilot trial in the field and evaluated and modified accordingly, before it may be considered for implementation on a larger scale and finally subjected to rigorous evaluation. The procedures in this phase of the project were the following:

a. the administration of the CREED 3 Test Battery to participating classes.

b. the evaluation of the elements of the program.

By teachers - Printed Rating Forms
Written Narratives
Individual and Group Discussion

By observers - Printed Rating Forms
Written Narratives

c. training of Teachers and Observers.

Because the staff considers that the ultimate value of the program will be measured by the final implementation of the results of the evaluation, this phase will be discussed in depth.

a. The administration of the CREED 3 Test Battery to participating classes

The administrators of the eleven schools for the deaf in New York State were requested to select two classes to

particpate in the field trial of the program. We requested that at least one of the classes include children who fell into the category of "special deaf child," as operationally defined in the on-going CREED project. The operational definition for "special deaf child" is a deaf child who has been designated as one with special learning problems by supervisors and teachers in his respective school. Children categorized as "typically deaf" were included in recognition of administrative problems in the implementation of the program. The number of children in the current project is presented in Table 4, page 29.

While the major objective of this phase was the "child-testing" of the elements of the program, the fundamental responsibility of the CREED project is service. Thus, it was decided to administer the CREED 3 Test Battery to all participating children in order to provide teachers with a description of their performance in the five skill areas. Within the exigencies of time an attempt was made to recommend to the teacher the different elements of the program that might meet the varying needs of her children.

A limitation on the testing must be clearly stated here. As explained in the CREED 3 Final Report, (1969) the CREED 3 Test Battery was designed to be administered by the child's teacher. Because the teachers in the current project were to be involved for a five-month period in the field trial phase, we could not require that they administer the Test Battery, which takes about one and one-half hours per child.

To overcome this difficulty, well-qualified examiners were engaged to administer the tests. We believe that in many children such a testing situation may well provide a minimum level of performance; however, we considered that even the minimum performance provided important information for the prescription of a program of instruction for the child. Certainly, if the child were more competent at a specific level of a skill than he demonstrated on the test, such competence would be reflected in his performance at that level under the more comfortable conditions of instruction by his teacher. While such an occurrence may result in spurious test-task relationships, at this point in the program development we were primarily interested in the child's performance with the tasks. Analyzing the nature of the relationship between the test-task and the program-task is beyond the scope of the current project. Indeed, the results of the current project are prerequisite to such a study.

b. Evaluation of the elements of the program

Our objective at this point in the project was to develop a body of activities of satisfactory content validity that we believed were likely to aid in the remediation of deficiencies in tasks on the CREED 3 Test Battery. While content validity is necessary, it is not sufficient; if the materials and procedures are to succeed they must meet criteria other than apparent relevance. It is at this level that many programs fail. The CREED staff considered the following criteria to

be of importance in the use of program materials with three through eight-year-old deaf children with special learning problems:

1. interest - immediate and sustained
2. ease of manipulation
3. amount of demonstration required
4. time required to master task
5. attention and distractibility

In order to obtain information about these variables, the participating teachers were requested to complete special rating forms. A sample of the Teacher's Rating Form may be found in Appendix B, pages 127 through 130.

In addition, the CREED staff interviewed teachers individually, to obtain information about other aspects of the program, including the sequence of difficulty levels, the relevance to their regular programs and the apparent effectiveness in remediation of deficiencies. At these interviews, teachers were strongly encouraged to recommend changes at all levels of the program and to contribute their own instructional techniques.

Because the CREED staff has found that the mutual exchange of opinions, ideas and experiences by participating teachers provides invaluable information for both the teacher and the researcher, several group seminars were held for the evaluation of the program in process.

The information obtained from the teacher was considered as the primary source of data for program modification. The teacher's ratings, however, contribute information after the completion of a task. In order to obtain a full description

of the processes involved in the implementation of the program, an objective evaluation of the variables under consideration must be obtained at the time of instruction by neutral observers. Qualified persons with both educational and psychological backgrounds were trained to be neutral observers of the teacher-child-materials interaction on the basis of the:

a. child's activity with the teacher
b. child's activity with the materials
c. teacher's activity with the child and the materials

A sample of the Observer Rating Form is presented in Appendix C.

Because both the Teacher's Rating Forms and the Observer's Rating Forms are quite comprehensive, teachers and observers were not required to complete the forms for <u>every</u> child for <u>every</u> activity. It was our expectation that forms from a majority of children in each age group for each activity would provide a more than adequate sample for analysis of the variables under consideration. Had we required each teacher and observer to complete a full set of Rating Forms we would have needed at least twice the time allotted.

Thus, we met conditions of time and energy for teachers and observers <u>and</u> children, since all children did need instruction in <u>all</u> activities.

Dr. Alan Lerman, Director of the Research Department at the Lexington School for the Deaf, was responsible for the development of the rating instruments used by both participating teachers and neutral observers.

5. Training of Teachers and Observers

Again, exigencies of time permitted only a minimum period for the training of participating teachers in the use of the program and the Rating Forms. We were particularly pressed for time for the training of the observers. The recording of on-going activity on an observation schedule is a most demanding skill. In optimal training procedures, extensive opportunity is provided for the observer to use the instruments with supervision before compiling data with it. While Dr. Lerman held intensive training sessions for the observers for two days, including their use of the instruments with video-taped sessions, actual classroom sessions, and the evaluation of their results through group interaction, nevertheless we can consider such a time period only a bare minimum. The observers were, however, in constant communication with CREED personnel, to aid in the execution of their task. It is quite possible that so short a training period has had a negative effect upon the reliability of the results; we can only hope that the quality of training will mitigate - somewhat - these effects.

The time permitted for training of the teachers was even shorter. At the three-hour meeting, only the more complex aspects of the procedures and the materials in the Teacher's Guide, and the various requirements of Rating Forms, could be discussed. This was particularly disconcerting, because the Teacher's Guide was quite comprehensive and the teachers were

requested to complete 21 Rating Forms. CREED personnel interviewed participating teachers during the trial periods, however, so it was possible to resolve problems at the time of these visits.

While we have explained in detail the limitations of the training, we must strongly emphasize the fact that we were not designing an experimental research study. We were subjecting a set of remedial procedures and materials to a pilot trial Typically, such trial is accompanied by teachers' seminars, during and after field testing, at which experiences are shared with each other and with those who constructed the program. Such seminars are of great value and, as mentioned above, the CREED staff held three Seminars for participating teachers. In consultation with the Research Department of the Lexington School, the CREED staff decided that, in addition, more tangible data should accompany these seminars so that decision-making might be based on a firm foundation. It is worth repeating here that service is the only goal of CREED research; thus, statistical procedures are used not for their admirable and parsimonious design, but in order to aid in the modification and final implementation of the results. Thus, while there were many problems in the gathering of the data for this study, the very fact that it was decided to subject the program to such evaluation processes at all is a strong argument for the serious consideration of the project's results.

TABLE 4

Number of Special and Typically Deaf Children
Participating in Field Trials of CREED 4 Project

	4 Years	5 Years	6 Years	7 Years	8 Years
Special	6	42	20	17	23
Typical	6	18	6	0	0
Total	12	60	26	17	23

Chapter III

Results

A. Evaluation of the Field Trials

The data for the evaluation of the field trials of the CREED 4 program of remediation were obtained from the following sources:

1. Teachers' Ratings
   a. Teachers' General Evaluation of the Materials
   b. Teachers' Evaluation of the Individual Child
2. Teachers' Comments
   a. Taped Group Seminars
   b. Personal Interviews
   c. Written Comments
3. Observers' Ratings
   a. Observation Schedules
   b. Observers' General Ratings
4. Observers' Comments

While all of these sources provided data about the implementation of the program, they differed greatly in design and require some explication before the presentation of their analysis.

1. Teachers' Ratings

Two ratings were obtained from each participating teacher: the first, a rating of the materials in which she was asked to evaluate the activities in general after she had worked with the children who required them; the second, a rating of an individual child when she had completed an activity with him.

a. Teachers' General Evaluation of the Materials

The variables on which the activities were evaluated included:

Difficulty in Communicating Task Instructions
Relevance to Class Objectives
Level of Interest to Teacher
Child's Reaction to Number of Items Included in Section
Amount of Time Required to Carry Out the Entire Sequence
Ease of Manipulation of Materials by Teacher
Maintenance of Materials
Storage

Three-level scales were provided for the rating of each variable, except for the "Amount of Time Required to Carry Out the Entire Sequence," for which a five-level scale was used (see Appendix B, pages 127 through 130).

The mean percentages of teacher responses to the scales on this section of the Rating Form are reported in Table 5 (see pages 51 through 64).

These data were obtained for the purpose of modifying specific aspects of the program according to the teachers' needs; however, there are some points that may be of general interest.

The consistently positive response to the Memory activities warrants special attention. The activities were viewed as both positively related to classwork and of high interest to the teacher. An unexpected result was the consistently negative response to the "tape" activities under Body Awareness.

In general, the pre-academic nature of the program is reflected in the teachers' response that the activities

have "some relation" to their regular programs. While teachers rated Visual Analysis and Conceptualization skills as "highly related", they rated only Association activities as high in interest to them as Memory.

Teachers responded with "somewhat difficult to explain" consistently to the activities in the Conceptualization area. The activities in no other skill area were rated as consistently at this level of difficulty.

b. The Teachers' Evaluation of the Individual Child

The child was rated on separate activities developed for each of the five skill areas. The ratings for an activity included those of the following variables that were appropriate to its content:

1. Interest -- the level of interest demonstrated by the child in the task when under teacher direction.

2. Sustained Interest -- the level of interest demonstrated by the child in the task when working without direct teacher supervision.

3. Amount of Demonstration -- the number of repetitions of directions required by the child to comprehend task requirements.

4. Mastery of Task -- the number of trials required by the child to complete the task.

5. Ease of Manipulation -- the observed difficulty the child had in handling the materials.

6. Quantity and Complexity of Stimuli -- the observed disturbance of the child with the number of materials and the complexity of their components.

As mentioned above, all children did not require help in all skill areas; thus, each child contributed ratings to a different combination of activities. In other words, the total sample of children upon which the analyses are based differs from activity to activity. Admittedly, this changing sample was permitted in recognition of the different needs of each participating child; nevertheless, it provided us with a large fund of information from a varying population.

Each variable was rated on the basis of a five-level scale. Tabulations were made of the frequency of teachers' ratings of their children at the five levels. The CREED staff believed that the sequencing of the program components should produce significant differences in the major variables as a function of increasing age. Thus, all variables were evaluated on the basis of age. Unfortunately, there were so few classes with 3- through 4-year-olds selected by administrators for participation that statistical analyses of their data were not warranted. The small number of 7- through 8-year-olds as compared with the 5- through 6-year-olds demanded that we combine the frequencies of the teachers' ratings of their children on the five-level scale into two levels in order to test the differences in ratings as a function of the age of the child.

The ratings were subjected to a Chi Square test of the significance of the differences between the observed proportion of frequencies and the expected proportion of frequencies of teachers' ratings at the separate scale levels. While it might be expected that the small number of significant Chi Squares are a result of chance because of the large number of tests run, it should be remembered that the total sample upon which each test is based is different. In other words, all Chi Square tests were not run upon one intact group; while there were, admittedly, many of the same children in several groups, the total group composition differed from activity to activity. Nevertheless, caution must be exercised in making inferences based upon differences resulting in only marginal levels of significance. The results of these analyses are presented in Tables 6 through 11 (see pages 65 through 98).

1. Interest--(the level of interest demonstrated by the child in the task when under teacher direction). The results of the analyses of the frequencies of rating on this variable are reported in Table 6 (see pages 65 through 71). There are no statistical differences in the proportion of frequencies of teachers' ratings for both age groups. Inspection of these frequencies revealsthat teachers rated both groups as high in interest on most activities.

2. Sustained Interest--(level of interest demonstrated by the child in the task when working without direct teacher supervision). The analyses of the frequencies for this variable are reported in Table 7 (see pages 72 through 78).

There are clearly no statistical differences in the proportion of ratings falling at the various scale levels within each age group; in addition, similar proportions of both groups seem to fall within ratings of high and low sustained interest. It must be noted here that several of the teachers confided that their ratings were somewhat unreliable because the very nature of this variable dictated that their attention might be directed elsewhere.

3. Amount of Demonstration--(number of repetitions of directions required for the child to comprehend task requirement). The results of the analyses of ratings on the variables are presented in Table 8 (see pages 79 through 85).

Inspection of the table reveals that there are no significant differences between the age groups in the proportion of children rated as comprehending the task after one demonstration except in Balancing-Over an Obstacle, Jumping with Locomotion, and Rhythmical Jumping. There was a significant difference in the frequencies with which the younger children were rated as needing more than one demonstration for these activities.

There are no significant differences in the frequencies of ratings under Attention activities. From inspection, it appears that similar proportions of children in both age groups were distributed at the scale levels. While many understood the task with one demonstration, a large number in both age groups needed several demonstrations.

A trend similar to that in Attention was found in the Memory activities (see page 81). Children in

both age groups are distributed at both scale levels.

Under Visual Analysis, in 4 of the 6 activities, the 5- through 6-year-olds were rated as requiring more demonstration for comprehension of the task than 7- through 8-year-olds.

In Sensory-Motor Integration tasks, there were no significant differences in the proportion of those requiring several demonstrations and those needing only one as a function of age. Only in Hole-Punch and Channel Drawing-Chalk Board, did the teachers rate a significantly greater number of 5- through 6-year-olds as needing repeated demonstrations.

Under Conceptualization activities (see pages 84 and 85), both age groups fall in similar proportions at both scale levels; thus, while many children at both age levels had no difficulty in comprehending the task, many needed repeated demonstrations. Only in Single Classification, Three-dimensions-Two classes,and Single Classification, Two-dimensions-Two classes were the older children rated significantly less frequently as needing more than one demonstration.

4. Mastery of Tasks--(the number of trials required by the child to complete the task). The results of the analyses of the ratings on this variable are reported in Table 9, pages 86 through 92. In Gross Motor activities, there are no statistical differences in the frequencies with which the children in both age groups are rated as mastering the tasks

of Balancing, Throwing and Hopping. Upon inspection of the frequencies, it is apparent that both groups find the activities difficult. Only in two Jumping activities were the 7- through 8-year-olds rated as mastering the activity with less difficulty than the 5- through 6-year-olds.

Under Attention, see pages 87 and 88, cells for both age groups contain similar proportions of children who could master the tasks without difficulty.

The differences in rating frequencies of the Sensory-Motor Integration activities of Body Awareness, Manipulation of Beads and Clothespins, Channel Drawing on paper and Connecting the Dots, see page 89, did not reach levels of significance; thus, we must again acknowledge that similar proportions of children in both age groups could master these activities. On the other hand frequencies for the tasks of Hole-Punching and Channel Drawing on the Chalkboard reached levels of significance. Inspection of the frequencies reveals that a larger number of children in the older group master these tasks. It should be remembered that significant differences were also found on these tasks in the frequencies with which added demonstrations were needed (Table 8, see page 83).

The differences in frequencies of all Visual Analysis activities (Table 9, see page 88) reached levels of significance. It is quite apparent that more 7- through 8-year-olds master the activities than do 5- through 6-year-olds. Again, the 7- through 8-year-olds required fewer demonstrations In 3 of the 6 tasks (Table 8, see page 82).

In Table 9, see page 88, the greater proportion of ratings of 2-5 in 4 out of 5 Memory Tasks seems to indicate that these were somewhat difficult to master for both groups. Hole-Punching tasks are apparently easier for the 7- through 8-year-olds.

The frequencies for the Conceptualization skills revealed a similar proportion of both age groups able to master most activities. The older groups did find activities under Seriation and Single Classification with 3 dimensional objects easier to master than did the younger groups.

5. Ease of Manipulation--(the observed difficulty in handling the materials). The results of the analyses of the ratings of this variable are reported in Table 10, pages 93 and 94. It should be noted that ratings were obtained only for those activities for which this variable was appropriate. Inspection of the table reveals that there were no differences in the difficulty with which age groups manipulate the program materials except in Hole-Punching and the Serial Ordering of gummed circles and strips. As might be expected, the younger children were rated more frequently as having difficulty in manipulation.

6. Quantity and Complexity of Stimuli--(the observed disturbance over the number of materials and the complexity of their components). Inspection of Table 11 (see pages 95 through 98) reveals very low frequencies of ratings of the materials at scale level 2, "some distraction by number of stimuli" and scale level 3, "very distracted by number of stimuli."

It is clear that only under one Seriation task are there 7 children for whom teachers gave a negative rating on this variable. In all other activities for which this rating was appropriate there are 4 or fewer such negative instances.

2. Teachers' Comments

In the section on Methods we discussed the advantages of obtaining quantifiable data through the use of Rating Scales and Observation Schedules; these data provide us with the opportunity to evaluate all activities on all relevant variables. They are deficient, however, in that they can not provide us with a description of the circumstances unique to a child and teacher. We can obtain such information only from comments from the teacher.

In our search for as much information about the program as was possible within the limitations of project time and teachers' time and energy, we interviewed each teacher, taped three group seminars for consideration of the program, and invited written comments from all participating teachers.

It would be impossible to include here all the ideas that the CREED 4 staff hopes to implement in the modification of the program; however, we should like to share those recommendations that were mentioned repeatedly and that may prove of general interest to educators of the deaf.

a. General Recommendations

1. The program was devised so that the teacher was required to use the same materials for activities in different skill areas. Teachers expressed very positive feelings about the opportunities this provided for the child to gain

flexibility in learning. They acknowledged that many of their children demonstrate rigidity of behavior and difficulty in changing from one learning set to another. They found that this aspect of the program provided them with opportunities to to expose the child to experiences requiring adaptation to change.

2. The teachers acknowledged that working with sequential activities on a one-to-one basis provided them with the opportunity to observe strengths and weaknesses in their children at various levels of accomplishment. They used the activities for both instructional and diagnostic purposes.

3. Teachers felt very strongly that the steps within the sequence of activities were too large in several skill areas. They urged the CREED staff to interpolate activities that would bridge the gap between these levels. The teachers of the 7- through 8-year-olds felt that the ceiling activities were far too easy for many children and that higher levels of difficulty must be developed for the older group. Those teachers with younger children requested that the introductory activities for each skill be set at even lower levels, to account for the child with very serious deficiencies.

4. Teachers requested that the ceiling activities include those that provide a transition from the prerequisite skills to traditional academic requirements.

5. It was strongly urged that during the demonstration of a task, a model be provided for the child so that after attempting the task he is able to match his work

with that of the model. They felt that such feedback would be an aid both to instruction and to motivation.

b. Special Recommendations

1. Most teachers felt that the activities with the Dermasil tape under Body Awareness were not useful in developing awareness of body parts. They suggested that other activities be devised for this function and that more attention be directed to the development of visualization of the body parts.

2. Teachers were pleased with the opportunity presented to the child for use of tools such as the Hole-Punch; however, they felt that there must be tool activities of medium manipulative difficulty interpolated between those with the Clip-Clothespin and the Hole-Punch.

3. While the sensory-motor manipulation skills developed by the Peg Board-Form Copying, Channel Drawing and Connecting Dots activities were acknowledged as important, the tasks were described as of low interest. It was recommended that the tasks be redesigned with more novel forms and attractive colors.

4. Teachers felt that the attention and memory activities were singularly useful. They felt that there is a dearth of materials for the training of concentrated focusing of attention, and for the extension of a child's span of short-term memory. They urge very strongly that the activities in these areas be greatly expanded.

5. Teachers found that the forms used for Visual Analysis and Classification were difficult to sort and prepare for the demonstration. The beads used in Manipulation, Memory and Sequencing activities were also considered unwieldy. Teachers urged that holders be designed for these materials to simplify their presentation.

6. While the teachers felt that the opportunity to observe the child on a one-to-one basis on the Attention, Memory and Classification activities provided invaluable information, they believed that the children also enjoyed working together on such activities without direct teacher involvement. They stated that the children enjoyed taking turns as "teacher" and, in so doing, both learned and taught.

3. Observers' Ratings

As mentioned above, the observers were trained in the use of an observation schedule (Appendix C, see pages 131 through 133). This interaction was separated into discrete elements for the purposes of recording. To fulfill the goal of program modification the elements to be observed and recorded were as follows:

CHILD ACTIVITY WITH TEACHER

A. Child does not attend to teacher

B. Child watches teacher (includes watching hands, etc. while she demonstrates; passive)

C. Child "talks to" teacher (active interaction; not just passive repeats of teachers' words; includes non-verbal actions)

CHILD ACTIVITY WITH MATERIALS

1. Child does not attend to materials

2. Child looks at materials

3. Child manipulates materials (includes touching for play as well as execution of task)

TEACHER ACTIVITY

O Teacher attends to others and other things (anything extraneous to task)

W. Teacher watches child

D. Teacher demonstrates materials

The observers were present one-half day a week for eight weeks in each class. They observed different children working with different materials for 10-to-20 minute periods. They observed the teacher and child on a one-to-one basis and recorded their observations separately for each child and for each activity. For example, they recorded Johnny B. working with Miss J. on the Seriation activity of ordering gummed circles for a period of 15 minutes. As with the Teachers' Evaluation of Individual Children, their data for separate activities are based upon different combinations of children, since different children needed work in different activities.

In addition, they rated the interaction of the teacher, child and materials after the session was completed. As with the participating teachers, their general comments about the materials were solicited by the CREED staff.

a. The Observation Schedules

Much information may be obtained from an analysis of the data in the observation schedules. For the

purposes of this report, the data were analysed to determine the interest level of the materials. Three categories were devised:

1) Overall Interest -- score obtained by counting the number of observations that contain a 2 or 3 (see Appendix C, pages 131 through 133, for specific items).

2) Sustained Interest -- score obtained by counting the number of occurrences of A2O, A2W, A3O and A3W. This is a sub-category of Interest, measuring the interest of the child in the materials when not directly instructed by the teacher.

3) Inattention -- a score obtained by counting the number of occurrences of A1D and A1W.

The first two categories were similar to those used in the Teachers' Evaluation Forms and the third is a negative corollary of the first two. To quantify the data a percentage was computed based upon the number of occurrences of a behavior in a specific category over total behaviors recorded for that session. In other words, the recorded behavior elements that were used to construct the category Interest (all 2's and 3's) were counted and divided by the total number of behaviors recorded for that session.

The percentages for each category are reported in Table 12 (see page 99). It is readily apparent that the children demonstrated a high overall interest in the materials.

Consideration of the percentages under Sustained-Interest must be made with caution. They are clearly dependent upon

the opportunity provided to the child for independent activity in the short space of time in which the observer was present. In addition, a low percentage might well be the result of the difficulty the child had in comprehending the task instructions, thus requiring that the session observed be devoted largely to that component. Typically, the observers recorded behavior at the time of the introduction of the activity to the child. Thus, there is the strong probability that they observed a disproportionately large period of time at the point of instruction and demonstration. The child would be more likely to engage in independent activity on subsequent exposure to the materials. (Table 13, see page 100).

Thus, recognizing the problems attendant upon interpretation of this category, we may accept as a positive indication of sustained interest a proportion of 35% and over of the total time of observation of the interaction with the materials spent in independent activity with the materials.

While the Gross Motor activities are very poor in holding interest, many of the Sensory-Motor tasks and Conceptualization activities work well.

The percentages of behavioral components of Inattention are reported in Table 14 (see page 101). It should be remembered that this is a measure of the child's interest while working with the teacher. As the literature indicates (Blank and Solomon, 1968), one should expect that one-to-one contact will heighten interest with any activity. There are some indications that the children were less attentive to selected

activities: in particular, Balancing, Throwing, Rhythmic Movement, Conceptualization-One Attribute and Conceptualization-Two Attributes. In general, the percentages here are a direct inverse of the percentages in Interest.

b. Observers' General Ratings

The observers requested that they be able to rate the materials on a three-level scale upon completion of a session. The variables upon which they rated each activity were:

Attention
Amount of Demonstration
Ease of Manipulation

The frequencies with which they rated each activity are presented in Tables 15,16,17, see pp.102-109. Because there were too few general ratings for each activity, Chi Square Tests were not run; however, the frequencies at the scale levels are presented for inspection.

The low total frequencies of response are to be expected since the observers were present for only one-half day and, therefore, did not have the opportunity to rate a large number of children on the same task. Such frequency size dictates that we indicate imp'ications of the results only with great caution.

From the greater frequency of responses within the negative rating 3 (see Appendix C, pages 131 through 133). It seems apparent that the observer view the level of attention, amount of demonstration and ease of manipulation as somewhat less acceptable than the teachers. Their ratings at completion of the task differ noticeably from the percentages of behavior recorded on the

observation schedules at 7-second time intervals. If we consider Interest and Attention as manifestations in the same general areas of behavior (Appendix C, see pages 131 through 133), then this difference indicates some ambivalence of response. Peculiarly, the observers' recordings, descriptions of behavior at the time of occurrence (Tables 12, 13 and 14, see pages 99 through 101) bear greater similarity to the Teachers' Ratings (Tables 6 through 11, see pages 65 through 98).

This may well be the result of the fact that on the three-level Rating Scale the observers are rating on the basis of only a small sample of the child's total behavior. The teacher, on the other hand, is using the entire range of the child's behavior on the tasks after a number of presentations. This may explain the disparity between Observers' Ratings and Teachers' Ratings; the reasons for the apparent relationship between the recorded behavior and the Teachers' Ratings is more difficult to explain. We should like to believe that the sensitivity of the categories upon which the recordings of the behavioral situations were based is such that it provided a good indication of the overall response of the child in the complete period of task activity. This is quite a presumptuous expectation however; most likely the lack of correlation between the positive Observers' Recordings, positive Teachers' Ratings and the negative Observers' Ratings is the result of a combination of variables. Among these may be the fact that the teachers' expectation for the optimal behavior level of her child is set lower, in concert with her familiarity of the child's behavioral repertoire.

4. Observers' Comments

One might have expected that their diversified background would result in a very different set of recommendations for the program from the observers as compared with those obtained from the participating teachers. Surprisingly, they covered many of the same points as the teachers in their personal reports.

We report here additional ones that might be of general interest.

a. Gross Motor tasks should be tied to cognitive tasks such as attention and rule behavior to hold the interest of the child (e.g., the child must jump when a green circle appears, hop when a red square appears, etc.)

b. Sequences of discrimination tasks must progress in very gradual steps from simple forms to more complex, including picture forms that represent real objects.

c. The instructional materials must be made more durable to withstand the wear and tear of active use by the children.

B. The Relationship Between Teachers' Ratings and Observers' Recordings

It became apparent, upon inspection of the Teachers' Ratings and the percentages of recorded behavior by the observers, that there were similarities between both sources of evaluation on the Interest Level of the materials. In order to obtain a more precise description of this relationship, correlations were computed between the Teachers' Ratings of

the Interest Level of an individual child and the percentage of behavior categorized under Interest that was recorded on the Observation Schedule for the same child. Such correlations were run on all activities where there was a sufficiently large number of Teachers' Ratings and Observation Schedules for the same children on the same activity.

The results of this analysis are reported in Table 18(see page 110). There is a very clear indication of a relationship between the interest behavior recorded by the observer and the interest level as rated by the teacher. Indeed, the correlations of the measures on Seriation, Memory, Sensory-Motor Integration-Peg Board and the Classification-One Attribute are quite high for measures obtained from such different instruments. Because the instruments are so different, the correlations of .50-.60 on Association, Sensory-Motor Integration-Beading and Peg Board Connecting dots and Jumping activities may be considered fairly respectable.

Apparently, the evaluation of both teachers and observers reflect similar reactions to the child's responses to the materials.

C. Tests

The results of the administration of the CREED Test Battery are reported in Tables 19 through 21 (see pages 111 and 112). Comparison with the results of the CREED 3 project are possible only for sub-tests 3, 4, 5, 6, 8 and 9 for the older age groups. Analyses of the results of the CREED 3 project dictated that certain modifications be made for maximum reliability and

validity; thus, these sub-tests differ from those in the original battery.

As one might expect, means and standard deviations compare quite favorably. This is most encouraging in view of the fact that the tests were administered by examiners unfamiliar to the children.

The only dramatic difference appears to be in the performance of the 7- through 8-year-old special children, whose scores on the Form-Copying Test (low score denoting superior performance) and on the Target Test are superior to those of the CREED 3 group.

TABLE 5

Teacher Evaluation of Materials*

Rating Scale Level	A: Difficulty in Communication of Instructions												
	Gross Motor												
	Jumping				Hopping		Balancing					Throwing	
	A N=18	B N=19	C N=19	D N=16	A N=18	B N=18	A N=15	B N=16	C N=13	D N=14	E N=8	A N=20	B N=16
Very Easy to Explain	.89	.84	.79	.62	.83	.61	.87	.88	.61	.86	.75	.95	.62
Often Difficult to Explain	.06	.11	.11	.38	.11	.22	.07	.06	.31	.07	.00	.05	.38
Not Able to Get Idea Across	.05	.05	.10	.00	.06	.17	.06	.06	.08	.07	.25	.00	.00

Rating Scale Level	A: Difficulty in Communication of Instructions										
	Gross Motor		Attention				Memory				
	Rhythmical Movement		Focusing		Immediate Recognition						
	A N=11	B N=11	A N=20	B N=20	A N=20	B N=19	A N=12	B N=12	C N=12	D+E N=11	F+G N=9
Very Easy to Explain	.91	.91	.85	.55	.65	.58	.67	.92	.75	.64	.89
Often Difficult to Explain	.09	.09	.10	.40	.30	.32	.33	.08	.25	.36	.11
Not Able to Get Idea Across	.00	.00	.05	.05	.05	.10	.00	.00	.00	.00	.00

(continued)

* See Appendix A for complete list of specific activities.

TABLE 5 (continued)

Rating Scale Level	A: Difficulty in Communication of Instructions													
	Visual Analysis						Sensory Motor Integration							
							Body Awareness	Beading and Pegboard			Clothespin and Hole Punch			
	A N=17	B N=17	C N=16	D N=17	E N=17	F N=17	N=19	A N=18	B N=20	C N=19	A N=17	B N=15	C N=16	
Very Easy to Explain	1.00	.94	.81	.82	.71	.70	.79	.66	.75	.53	.82	.80	.75	
Often Difficult to Explain	.00	.06	.19	.12	.23	.18	.11	.28	.25	.42	.12	.20	.25	
Not Able to Get Idea Across	.00	.00	.00	.06	.06	.12	.10	.06	.00	.05	.06	.00	.00	

Rating Scale Level	A: Difficulty in Communication of Instructions													
	Sensory Motor Integration								Conceptualization					
	Channel Drawing					Connecting Dots			Association		One Attribute			
	A N=17	B N=21	C N=21	D N=21	E N=21	A N=19	B N=19	C N=18	A N=20	B N=21	A N=20	B N=20	C N=20	D N=18
Very Easy to Explain	.88	.95	1.00	1.00	1.00	.89	.95	.89	.90	.86	.90	.55	.50	.56
Often Difficult to Explain	.12	.05	.00	.00	.00	.11	.05	.11	.10	.14	.10	.45	.45	.44
Not Able to Get Idea Across	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00

(continued)

TABLE 5 (continued)

Rating Scale Level	A: Difficulty in Communication of Instructions											
	Conceptualization											
	Two Attributes		Single Classification				Seriation-Size					
	A N=16	B N=15	A N=12	B N=13	C N=14	D N=15	A N=16	B N=15	C N=15	D N=15	E N=15	F N=15
Very Easy to Explain	.44	.60	.92	.92	1.00	.93	.50	.53	.60	.60	.53	.47
Often Difficult to Explain	.56	.40	.08	.08	.00	.07	.50	.47	.40	.33	.40	.46
Not Able to Get Idea Across	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	.07	.07

Rating Scale Level	A: Difficulty in Communication of Instructions					
	Conceptualization					
	Seriation-Number					
	A N=11	B N=11	C N=10	D N=10	E N=10	F N=10
Very Easy to Explain	.64	.55	.90	.90	.90	.90
Often Difficult to Explain	.36	.45	.10	.10	.10	.00
Not Able to Get Idea Across	.00	.00	.00	.00	.00	.10

(continued)

TABLE 5 (continued)

Rating Scale Level	B: Relevance to Class Objectives						
	Gross Motor					Attention	
	Jumping N=19	Hopping N=18	Balancing N=16	Throwing N=20	Rhythmic Movement N=11	Focusing N=21	Immediate Recognition N=20
Highly Related	.47	.39	.50	.40	.27	.43	.45
Some Relation	.53	.55	.50	.55	.64	.52	.40
No Relation	.00	.06	.00	.05	.09	.05	.15

Rating Scale Level	B: Relevance to Class Objectives						
	Memory N=12	Visual Analysis N=19	Sensory Motor Integration				
			Body Awareness N=19	Manipulation N=20	Clothespin and Hole Punch N=19	Channel Drawing N=21	Connecting Dots N=19
Highly Related	.83	.63	.16	.45	.21	.29	.37
Some Relation	.17	.32	.37	.50	.58	.66	.63
No Relation	.00	.05	.47	.05	.21	.05	.00

(continued)

TABLE 5 (continued)

Rating Scale Level	B: Relevance to Class Objectives					
	Conceptualization				Seriation	
	Association N=21	One Attribute N=18	Two Attributes N=16	Single Classification N=15	Size N=15	Number N=12
Highly Related	.62	.50	.31	.40	.47	.33
Some Relation	.33	.50	.63	.53	.46	.67
No Relation	.05	.00	.06	.07	.07	.00

Rating Scale Level	C: Level of Interest to Teacher						
	Gross Motor					Attention	
	Jumping N=19	Hopping N=18	Balancing N=16	Throwing N=20	Rhythmic Movement N=11	Focusing N=21	Immediate Recognition N=20
Very Interesting	.37	.17	.31	.20	.18	.33	.40
Interesting	.58	.83	.69	.80	.82	.57	.55
Lacking in Interest	.05	.00	.00	.00	.00	.10	.05

(continued)

TABLE 5 (continued)

Rating Scale Level	C: Level of Interest to Teacher						
			Sensory Motor Integration				
	Memory N=13	Visual Analysis N=20	Body Awareness N=19	Manipulation N=20	Clothespin and Hole Punch N=19	Channel Drawing N=21	Connecting Dots N=19
Very Interesting	.69	.30	.05	.15	.26	.19	.16
Interesting	.31	.60	.53	.70	.53	.62	.74
Lacking in Interest	.00	.10	.42	.15	.21	.19	.10

Rating Scale Level	C: Level of Interest to Teacher					
	Conceptualization					
	Association N=21	One Attribute N=19	Two Attributes N=16	Single Classification N=16	Seriation Size N=16	Seriation Number N=11
Very Interesting	.57	.11	.25	.06	.44	.27
Interesting	.38	.79	.56	.81	.37	.73
Lacking in Interest	.05	.10	.19	.12	.19	.00

(continued)

TABLE 5 (continued)

Rating Scale Level	D: Reaction to Amount of Items						
	Gross Motor					Attention	
	Jumping N=19	Hopping N=18	Balancing N=16	Throwing N=18	Rhythmic Movement N=11	Focusing N=20	Immediate Recognition N=20
Too Many	.05	.06	.19	.11	.00	.10	.10
Sufficient	.84	.83	.75	.72	.73	.60	.50
Not Enough	.11	.11	.06	.17	.27	.30	.40

Rating Scale Level	D: Reaction to Amount of Items						
			Sensory Motor Integration				
	Memory N=13	Visual Analysis N=20	Body Awareness N=18	Manipulation N=20	Clothespin and Hole Punch N=18	Channel Drawing N=21	Connecting Dots N=19
Too Many	.13	.20	.00	.05	.17	.19	.16
Sufficient	.69	.55	.44	.65	.44	.57	.74
Not Enough	.23	.20	.56	.30	.39	.24	.10

(continued)

TABLE 5 (continued)

Rating Scale Level	D: Reaction to Amount of Items					
	Conceptualization				Seriation	
	Association N=20	One Attribute N=19	Two Attributes N=14	Single Classification N=15	Size N=16	Number N=12
Too Many	.10	.21	.29	.20	.31	.00
Sufficient	.75	.58	.50	.60	.50	.75
Not Enough	.15	.21	.21	.20	.19	.25

Rating Scale Level	E: Amount of Time Required to Carry Out Sequence						
	Gross Motor					Attention	
	Jumping N=19	Hopping N=18	Balancing N=15	Throwing N=20	Rhythmic Movement N=10	Focusing N=20	Immediate Recognition N=20
Less than 5 Minutes	.00	.00	.00	.05	.00	.00	.05
5-10 Minutes	.11	.33	.13	.20	.20	.20	.20
10-20 Minutes	.37	.22	.33	.35	.50	.25	.35
20-30 Minutes	.26	.28	.27	.30	.20	.45	.30
More than ½ Hour	.26	.17	.27	.10	.10	.10	.10

(continued)

TABLE 5 (continued)

Rating Scale Level	E: Amount of Time Required to Carry Out Sequence						
			Sensory Motor Integration				
	Memory N=11	Visual Analysis N=20	Body Awareness N=17	Manipulation N=20	Clothespin and Hole Punch N=18	Channel Drawing N=21	Connecting Dots N=19
Less than 5 Minutes	.00	.00	.24	.00	.00	.00	.05
5-10 Minutes	.09	.00	.29	.10	.22	.14	.21
10-20 Minutes	.55	.35	.24	.25	.39	.48	.32
20-30 Minutes	.09	.15	.24	.30	.22	.33	.42
More than ½ Hour	.27	.50	.00	.35	.17	.05	.00

Rating Scale Level	E: Amount of Time Required to Carry Out Sequence					
	Conceptualization					
	Association N=21	One Attribute N=18	Two Attributes N=15	Single Classification N=14	Seriation Size N=16	Seriation Number N=12
Less than 5 Minutes	.14	.00	.07	.07	.00	.08
5-10 Minutes	.28	.06	.13	.36	.06	.17
10-20 Minutes	.29	.39	.20	.21	.06	.25
20-30 Minutes	.24	.22	.40	.29	.38	.25
More than ½ Hour	.05	.33	.20	.07	.50	.25

(continued)

TABLE 5 (continued)

Rating Scale Level	F: Ease of Manipulation by Teacher						
	Gross Motor					Attention	
	Jumping N=19	Hopping N=17	Balancing N=16	Throwing N=19	Rhythmic Movement N=11	Focusing N=21	Immediate Recognition N=20
Very Easy	.63	.76	.69	.95	.73	.81	.85
Somewhat Difficult	.26	.18	.25	.05	.27	.14	.10
Very Hard	.11	.06	.06	.00	.00	.05	.05

Rating Scale Level	F: Ease of Manipulation by Teacher						
			Sensory Motor Integration				
	Memory N=13	Visual Analysis N=19	Body Awareness N=19	Manipulation N=20	Clothespin and Hole Punch N=19	Channel Drawing N=21	Connecting Dots N=19
Very Easy			.84	.55	.63	.66	.63
Somewhat Difficult			.05	.40	.26	.24	.32
Very Hard			.11	.05	.11	.10	.05

(continued)

TABLE 5 (continued)

Rating Scale Level	F: Ease of Manipulation by Teacher					
	Conceptualization				Seriation	
	Association N=21	One Attribute N=18	Two Attributes N=15	Single Classification N=16	Size N=16	Number N=11
Very Easy	.90	.61	.50	.81	.31	.82
Somewhat Difficult	.10	.28	.19	.19	.56	.18
Very Hard	.00	.11	.31	.00	.13	.00

Rating Scale Level	G: Maintaining Materials						
	Gross Motor					Attention	
	Jumping N=18	Hopping N=17	Balancing N=16	Throwing N=20	Rhythmic Movement N=11	Focusing N=20	Immediate Recognition N=20
Materials Remained Intact	.72	.88	.88	.90	1.00	.80	.90
Some Items Misplaced or Damaged	.22	.06	.06	.05	.00	.10	.10
Most Items Misplaced or Damaged	.06	.06	.06	.05	.00	.10	.00

(continued)

TABLE 5 (continued)

Rating Scale Level	G: Maintaining Materials						
			Sensory Motor Integration				
	Memory N=13	Visual Analysis N=19	Body Awareness N=19	Manipulation N=20	Clothespin and Hole Punch N=18	Channel Drawing N=21	Connecting Dots N=19
Materials Remained Intact	.77	.84	.74	.80	.89	.81	.74
Some Items Misplaced or Damaged	.23	.16	.16	.15	.06	.14	.26
Most Items Misplaced or Damaged	.00	.00	.10	.05	.05	.05	.00

Rating Scale Level	G: Maintaining Materials					
	Conceptualization					
	Association N=21	One Attribute N=19	Two Attributes N=16	Single Classification N=16	Seriation Size N=16	Seriation Number N=12
Materials Remained Intact	.86	.89	.88	.81	.75	1.00
Some Items Misplaced or Damaged	.14	.11	.12	.19	.25	.00
Most Items Misplaced or Damaged	.00	.00	.00	.00	.00	.00

(continued)

TABLE 5 (continued)

Rating Scale Level	H: Storage						
	Gross Motor					Attention	
	Jumping N=19	Hopping N=16	Balancing N=16	Throwing N=20	Rhythmic Movement N=11	Focusing N=21	Immediate Recognition N=20
No Difficulty	.47	.63	.44	.80	.91	.90	.85
Some Difficulty	.53	.25	.38	.20	.09	.10	.15
Very Difficult	.00	.12	.18	.00	.00	.00	.00

Rating Scale Level	H: Storage						
			Sensory Motor Integration				
	Memory N=13	Visual Analysis N=19	Body Awareness N=19	Manipulation N=20	Clothespin and Hole Punch N=19	Channel Drawing N=21	Connecting Dots N=19
No Difficulty	.85	.74	.95	.55	.69	.67	.79
Some Difficulty	.15	.26	.00	.40	.26	.33	.21
Very Difficult	.00	.00	.05	.05	.05	.00	.00

(continued)

TABLE 5 (continued)

Rating Scale Level	H: Storage					
	Conceptualization					
	Association N=21	One Attribute N=19	Two Attributes N=16	Single Classification N=16	Seriation Size N=16	Seriation Number N=12
No Difficulty	.95	.74	.75	.75	.63	.92
Some Difficulty	.05	.21	.13	.25	.31	.08
Very Difficult	.00	.05	.12	.00	.06	.00

TABLE 6

Frequency of Teachers' Responses to Items on Rating Forms for the Evaluation of Individual Children: Interest

Item	Gross Motor-Jumping			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Jumping with Locomotion	1+2	32	12	
	3+4+5	14	0	3.30
Jumping from a Height	1+2	36	12	
	3+4+5	9	0	1.54
Jumping Over an Obstacle	1+2	36	12	
	3+4+5	9	0	1.54
Rhythmical Jumping	1+2	34	13	
	3+4+5	9	0	1.88
	Gross Motor-Balancing			
Item	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
On the Ground	1+2	33	8	
	3+4+5	11	0	1.26
On 4-Inch Side	1+2	38	9	
	3+4+5	7	1	0.00
Over Obstacles	1+2	31	10	
	3+4+5	6	0	0.69
Tilted	1+2	29	8	
	3+4+5	8	1	0.06
On 2-Inch Side	1+2	13	1	
	3+4+5	2	0	1.37

(continued)

*See Appendix B for description of scale levels.
**$\chi^{2}_{.05}=3.841$

TABLE 6 (continued)

Item	Gross Motor-Hopping			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Forward Locomotion	1+2	36	13	
	3+4+5	11	0	2.33
Over a Raised Obstacle	1+2	33	8	
	3+4+5	10	0	1.07

Item	Gross Motor-Throwing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Stationary Position	1+2	39	17	
	3+4+5	9	0	2.30
Moving Position	1+2	23	7	
	3+4+5	8	2	0.05

Item	Gross Motor-Rhythmic Movement			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Stationary Objects	1+2	24	2	
	3+4+5	4	0	0.25
Rotary Objects	1+2	27	2	
	3+4+5	3	0	0.61

Item	Attention-Focusing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Brief Exposure	1+2	42	15	
	3+4+5	10	3	0.01
Tracking	1+2	40	16	
	3+4+5	10	2	0.24

(continued)

TABLE 6 (continued)

Item	Attention-Immediate Recognition			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^2**
Slap-Jack	1+2	40	17	
	3+4+5	7	1	0.36
Hand Raising	1+2	35	16	
	3+4+5	8	1	0.71
Item	**Memory**			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^2**
Recall Beading-3 Dimensional Pattern	1+2	27	12	
	3+4+5	8	1	0.61
Recall Hole Punching-Sequence	1+2	33	16	
	3+4+5	2	0	0.04
Recall Cardboard Box-Location	1+2	29	16	
	3+4+5	11	1	2.18
Recall Forms and Pictures-Changed Location	1+2	21	11	
	3+4+5	7	0	1.87
Reproduction-Forms and Pictures	1+2	22	11	
	3+4+5	8	0	2.14

(continued)

TABLE 6 (continued)

Item	Visual Analysis			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
3 Dimensions-3 Objects	1+2 3+4+5	39 8	17 0	1.93
3 Dimensions-4+ Objects[1]	1+2 3+4+5	40 7	18 0	1.66
2 Dimensions-3 Objects-Pictures	1+2 3+4+5	37 4	16 0	0.52
2 Dimensions-4+ Objects[1]-Pictures	1+2 3+4+5	36 4	15 0	0.48
2 Dimensions-Printed Forms-3-5 Objects	1+2 3+4+5	36 8	20 2	0.37
2 Dimensions-Printed Forms-6+ Objects[1]	1+2 3+4+5	24 8	18 2	0.95

Item	Sensory Motor Integration-Body Awareness			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
General	1+2 3+4+5	39 12	18 0	3.62

Item	Sensory Motor Integration-Manipulation			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Beading	1+2 3+4+5	33 8	12 0	1.45
Pegboard-Simple Pattern	1+2 3+4+5	36 9	15 0	2.14
Pegboard-Complex Pattern	1+2 3+4+5	33 8	15 0	2.01

(continued)

[1] 3+ means 3 or more.
4+ means 4 or more.
6+ means 6 or more.

TABLE 6 (continued)

Item	Sensory Motor Integration-Manipulation Clothespin and Hole Punch			
	Rating Scale Level*	5-6 Special	7-8 Special	X^{2}**
Clothespins	1+2	37	6	
	3+4+5	6	0	0.10
Hole Punch-2 Holes	1+2	31	12	
	3+4+5	5	0	0.67
Hole Punch-3+ Holes[1]	1+2	31	13	
	3+4+5	5	0	0.78
Item	Sensory Motor Integration-Channel Drawing			
	Rating Scale Level*	5-6 Special	7-8 Special	X^{2}**
Chalkboard	1+2	33	8	
	3+4+5	9	0	0.89
Straight Line-1 Inch	1+2	39	14	
	3+4+5	8	0	1.45
Straight Line-Less than 1 Inch	1+2	38	14	
	3+4+5	8	0	1.51
Curve-1 Inch	1+2	38	14	
	3+4+5	8	0	1.51
Curve-Less than 1 Inch	1+2	36	14	
	3+4+5	10	0	2.26

(continued)

TABLE 6 (continued)

Item	Sensory Motor Integration-Connecting Dots			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
1-Inch Intervals	1+2	38	14	
	3+4+5	9	0	1.81
2-Inch Intervals	1+2	37	14	
	3+4+5	9	0	1.87
6-Inch Intervals	1+2	36	14	
	3+4+5	9	0	1.94
Item	Conceptualization-Association			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
3 Pairs	1+2	43	14	
	3+4+5	5	0	0 49
6+ Pairs[1]	1+2	42	17	
	3+4+5	4	1	0.01
Item	Conceptualization-Classification-One Attribute			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
3 Dimensions-Color	1+2	46	18	
	3+4+5	6	0	1.04
3 Dimensions-Size	1+2	43	17	
	3+4+5	8	0	1.70
2 Dimensions-Size	1+2	40	11	
	3+4+5	8	0	0.94
2 Dimensions-Shape	1+2	38	12	
	3+4+5	5	0	0.45

(continued)

TABLE 6 (continued)

Item	Conceptualization-Classification-Two Attributes Rating Scale Level*	5-6 Special	7-8 Special	X^{2}**
4 Items	1+2	22	13	
	3+4+5	3	0	0.44
6 Items	1+2	18	11	
	3+4+5	3	0	0.46
Item	**Conceptualization-Single Classification Rating Scale Level***	**5-6 Special**	**7-8 Special**	**X^{2}****
3 Dimensions-2 Classes	1+2	17	11	
	3+4+5	6	0	1.92
3 Dimensions-3+ Classes[1]	1+2	19	11	
	3+4+5	6	0	1.68
2 Dimensions-2 Classes	1+2	22	13	
	3+4+5	6	0	1.77
2 Dimensions-3+ Classes[1]	1+2	24	13	
	3+4+5	6	0	1.58
Item	**Conceptualization-Seriation-Size Rating Scale Level***	**5-6 Special**	**7-8 Special**	**X^{2}****
3 Dimensions-3 Objects	1+2	35	21	
	3+4+5	6	0	1.94
3 Dimensions-4+ Objects[1]	1+2	35	21	
	3+4+5	5	1	0.32
2 Dimensions-3 Objects	1+2	32	20	
	3+4+5	4	0	1.01
2 Dimensions-4+ Objects[1]	1+2	32	20	
	3+4+5	4	0	1.01
Pictured Objects-3 Objects	1+2	30	19	
	3+4+5	6	0	2.05
Pictured Objects-4+ Objects[1]	1+2	31	15	
	3+4+5	4	0	0.63

TABLE 7

Frequency of Teachers' Responses to Items on Rating Forms for the Evaluation of Individual Children: Sustained Interest

Item	Gross Motor-Jumping			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Jumping with Locomotion	1+2	21	6	
	3+4+5	19	6	0.03
Jumping From a Height	1+2	28	3	
	3+4+5	15	6	1.94
Jumping Over an Obstacle	1+2	23	5	
	3+4+5	17	6	0.14
Rhythmical Jumping	1+2	21	5	
	3+4+5	18	6	0.02
Item	Gross Motor-Balancing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
On the Ground	1+2	24	2	
	3+4+5	12	2	0.01
On 4-Inch Side	1+2	28	3	
	3+4+5	11	3	0.36
Over Obstacles	1+2	21	4	
	3+4+5	12	3	0.01
Tilted	1+2	20	4	
	3+4+5	13	2	0.03
On 2-Inch Side	1+2	9	1	
	3+4+5	6	0	0.07

(continued)

*See Appendix B for description of scale levels.
** χ^{2} .05=3.841

TABLE 7 (continued)

Item	Gross Motor-Hopping			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Forward Locomotion	1+2	23	11	
	3+4+5	15	2	1.56
Over a Raised Obstacle	1+2	21	4	
	3+4+5	13	8	1.86

Item	Gross Motor-Throwing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Stationary Position	1+2	33	9	
	3+4+5	11	8	1.85
Moving Position	1+2	23	8	
	3+4+5	4	7	3.55

Item	Gross Motor-Rhythmic Movement			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Stationary Objects	1+2	13	2	
	3+4+5	14	0	0.47
Rotary Objects	1+2	15	2	
	3+4+5	14	0	0.35

Item	Attention-Focusing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Brief Exposure	1+2	37	12	
	3+4+5	13	6	0.08
Tracking	1+2	40	12	
	3+4+5	9	6	0.95

(continued)

TABLE 7 (continued)

Item	Attention-Immediate Recognition Rating Scale Level*	5-6 Special	7-8 Special	χ^2**
Slap-Jack	1+2 3+4+5	33 7	10 6	1.57
Hand Raising	1+2 3+4+5	13 4	9 6	0.39
Item	**Memory** **Rating Scale Level***	**5-6 Special**	**7-8 Special**	**χ^2****
Recall Beading-3-Dimensional Pattern	1+2 3+4+5	27 6	10 2	0.10
Recall Hole Punching-Sequence	1+2 3+4+5	22 1	14 0	0.06
Recall Cardboard Box-Location	1+2 3+4+5	23 8	14 2	0.46
Recall Forms and Pictures-Changed Location	1+2 3+4+5	21 2	7 2	0.20
Reproduction-Forms and Pictures	1+2 3+4+5	26 2	9 2	0.19

(continued)

TABLE 7 (continued)

Item	Visual Analysis			
	Rating Scale Level*	5-6 Special	7-8 Special	X^{2}**
3 Dimensions-3 Objects	1+2	30	9	
	3+4+5	14	5	0.00
3 Dimensions-4+ Objects[1]	1+2	30	10	
	3+4+5	10	5	0.08
2 Dimensions-3 Objects-Pictures	1+2	34	10	
	3+4+5	7	5	0.89
2 Dimensions-4+ Objects-[1] Pictures	1+2	31	9	
	3+4+5	6	5	1.28
2 Dimensions-Printed Forms-3-5 Objects	1+2	30	14	
	3+4+5	10	6	0.01
2 Dimensions-Printed Forms-6+ Objects[1]	1+2	24	12	
	3+4+5	10	6	0.00

Item	Sensory Motor Integration-Body Awareness			
	Rating Scale Level*	5-6 Special	7-8 Special	X^{2}**
General	1+2	30	18	
	3+4+5	9	0	3.35

Item	Sensory Motor Integration-Manipulation			
	Rating Scale Level*	5-6 Special	7-8 Special	X^{2}**
Beading	1+2	28	9	
	3+4+5	13	3	0.01
Pegboard-Simple Pattern	1+2	35	11	
	3+4+5	10	2	0.02
Pegboard-Complex Pattern	1+2	27	12	
	3+4+5	14	2	1.15

(continued)

[1] 3+ means 3 or more.
4+ means 4 or more.
6+ means 6 or more.

TABLE 7 (continued)

Item	Sensory Motor Integration-Manipulation Clothespin and Hole Punch			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Clothespins	1+2	35	6	0.32
	3+4+5	8	0	
Hole Punch-2 Holes	1+2	30	7	0.32
	3+4+5	6	0	
Hole Punch-3+ Holes[1]	1+2	28	8	0.72
	3+4+5	7	0	
Item	Sensory Motor Integration-Channel Drawing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Chalkboard	1+2	34	6	0.04
	3+4+5	9	2	
Straight Line-1 Inch	1+2	37	11	0.05
	3+4+5	9	3	
Straight Line-Less than 1 Inch	1+2	37	11	0.05
	3+4+5	9	3	
Curve-1 Inch	1+2	37	11	0.05
	3+4+5	9	3	
Curve-Less than 1 Inch	1+2	36	11	0.12
	3+4+5	10	3	
Item	Sensory Motor Integration-Connecting Dots			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
1-Inch Intervals	1+2	37	11	0.12
	3+4+5	8	1	
2-Inch Intervals	1+2	37	11	0.12
	3+4+5	8	1	
6-Inch Intervals	1+2	36	11	0.14
	3+4+5	8	1	

(continued)

TABLE 7 (continued)

Item	Conceptualization-Association			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
3 Pairs	1+2	35	13	
	3+4+5	8	1	0.36
6+ Pairs[1]	1+2	35	17	
	3+4+5	6	1	0.31
Item	**Conceptualization-Classification-One Attribute**			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
3 Dimensions-Color	1+2	41	16	
	3+4+5	10	0	2.30
3 Dimensions-Size	1+2	40	16	
	3+4+5	10	0	2.38
2 Dimensions-Size	1+2	30	10	
	3+4+5	12	0	2.28
2 Dimensions-Shape	1+2	30	8	
	3+4+5	10	0	1.24
Item	**Conceptualization-Classification-Two Attributes**			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
4 Items	1+2	9	8	
	3+4+5	2	3	0.00
6 Items	1+2	9	6	
	3+4+5	2	3	0.07
Item	**Conceptualization-Single Classification**			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
3 Dimensions-2 Classes	1+2	10	9	
	3+4+5	7	0	3.20
3 Dimensions-3+ Classes[1]	1+2	12	9	
	3+4+5	7	0	2.68
2 Dimensions-2 Classes	1+2	19	11	
	3+4+5	8	0	2.54
2 Dimensions-3+ Classes[1]	1+2	20	11	
	3+4+5	9	0	2.80

(continued)

TABLE 7 (continued)

Item	Conceptualization-Seriation-Size Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
3 Dimensions-3 Objects	1+2	28	18	
	3+4+5	8	1	1.52
3 Dimensions-4+ Objects[1]	1+2	31	18	
	3+4+5	8	2	0.43
2 Dimensions-3 Objects	1+2	25	16	
	3+4+5	8	1	1.47
2 Dimensions-4+ Objects[1]	1+2	24	16	
	3+4+5	9	1	2.01
Pictured Objects-3 Objects	1+2	19	14	
	3+4+5	9	2	1.18
Pictured Objects-4+ Objects[1]	1+2	20	10	
	3+4+5	7	1	0.51

TABLE 8

Frequency of Teachers' Responses to Items on Rating Forms for the Evaluation of Individual Children: Amount of Demonstration Required

Item	Gross Motor-Jumping			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Jumping with Locomotion	1	29	12	
	2+3+4+5	16	0	4.30
Jumping from a Height	1	36	12	
	2+3+4+5	9	0	1.54
Jumping Over an Obstacle	1	29	9	
	2+3+4+5	5	1	0.02
Rhythmical Jumping	1	24	12	
	2+3+4+5	20	1	4.63
Item	Gross Motor-Balancing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
On the Ground	1	30	7	
	2+3+4+5	14	1	0.47
On 4-Inch Side	1	25	7	
	2+3+4+5	20	1	1.72
Over Obstacles	1	15	10	
	2+3+4+5	22	0	8.92
Tilted	1	25	10	
	2+3+4+5	12	0	2.82
On 2-Inch Side	1	8	1	
	2+3+4+5	8	0	0.00

(continued)

*See Appendix B for description of scale levels.

** χ^{2} .05 = 3.841

TABLE 8 (continued)

Item	Gross Motor-Hopping			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Forward Locomotion	1	33	13	
	2+3+4+5	11	0	2.58
Over a Raised Obstacle	1	22	5	
	2+3+4+5	18	3	0.00
Item	Gross Motor-Throwing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Stationary Position	1	34	16	
	2+3+4+5	14	1	2.64
Moving Position	1	7	5	
	2+3+4+5	24	5	1.58
Item	Gross Motor-Rhythmic Movement			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Stationary Objects	1	21	2	
	2+3+4+5	7	0	0.00
Rotary Objects	1	24	2	
	2+3+4+5	6	0	0.05
Item	Attention-Focusing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Brief Exposure	1	30	15	
	2+3+4+5	22	3	2.79
Tracking	1	26	11	
	2+3+4+5	24	7	0.15

(continued)

TABLE 8 (continued)

Item	Attention-Immediate Recognition			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Slap-Jack	1	21	11	
	2+3+4+5	26	7	0.82
Hand Raising	1	24	9	
	2+3+4+5	19	8	0.01
Item	Memory			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Recall Beading-3-Dimensional Pattern	1	10	7	
	2+3+4+5	26	6	1.83
Recall Hole Punching-Sequence	1	19	13	
	2+3+4+5	12	2	1.99
Recall Cardboard Box-Location	1	18	10	
	2+3+4+5	21	6	0.65
Recall Forms and Pictures-Changed Location	1	10	8	
	2+3+4+5	18	3	2.99
Reproduction-Forms and Pictures	1	17	7	
	2+3+4+5	14	4	0.02

(continued)

TABLE 8 (continued)

Item	Visual Analysis			
	Rating Scale Level*	5-6 Special	7-8 Special	X^{2**}
3 Dimensions-3 Objects	1	29	10	
	2+3+4+5	15	0	3.17
3 Dimensions-4+ Objects[1]	1	28	11	
	2+3+4+5	15	0	3.72
2 Dimensions-3 Objects-Pictures	1	26	17	
	2+3+4+5	15	0	6.59
2 Dimensions-4+ Objects[1] Pictures	1	28	16	
	2+3+4+5	13	0	4.89
2 Dimensions-Printed Forms-3-5 Objects	1	19	18	
	2+3+4+5	26	4	7.84
2 Dimensions-Printed Forms-6+ Objects[1]	1	22	16	
	2+3+4+5	13	4	1.04

Item	Sensory Motor Integration-Body Awareness			
	Rating Scale Level*	5-6 Special	7-8 Special	X^{2**}
General	1	31	16	
	2+3+4+5	19	2	3.31

Item	Sensory Motor Integration-Manipulation			
	Rating Scale Level*	5-6 Special	7-8 Special	X^{2**}
Beading	1	28	10	
	2+3+4+5	13	2	0.43
Pegboard-Simple Pattern	1	24	12	
	2+3+4+5	21	3	2.32
Pegboard-Complex Pattern	1	23	12	
	2+3+4+5	18	3	1.76

(continued)

[1] 3+ means 3 or more.
4+ means 4 or more.
6+ means 6 or more.

TABLE 8 (continued)

Item	Sensory Motor Integration-Manipulation Clothespin and Hole Punch			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Clothespins	1	25	6	
	2+3+4+5	18	0	2.37
Hole Punch-2 Holes	1	17	11	
	2+3+4+5	24	1	7.48
Hole Punch-3+ Holes[1]	1	18	13	
	2+3+4+5	18	0	8.24
Item	Sensory Motor Integration-Channel Drawing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Chalkboard	1	22	8	
	2+3+4+5	20	0	4.52
Straight Line-1 Inch	1	35	14	
	2+3+4+5	11	0	2.66
Straight Line- Less than 1 Inch	1	42	14	
	2+3+4+5	4	0	0.28
Curve-1 Inch	1	38	14	
	2+3+4+5	8	0	1.51
Curve- Less than 1 Inch	1	40	13	
	2+3+4+5	6	1	0.02

(continued)

TABLE 8 (continued)

Item	Sensory Motor Integration-Connecting Dots			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
1-Inch Intervals	1	30	13	
	2+3+4+5	16	1	2.79
2-Inch Intervals	1	39	13	
	2+3+4+5	7	1	0.11
6-Inch Intervals	1	36	14	
	2+3+4+5	13	0	3.20

Item	Conceptualization-Association			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
3 Pairs	1	39	14	
	2+3+4+5	8	0	1.45
6+ Pairs[1]	1	33	17	
	2+3+4+5	12	1	2.33

Item	Conceptualization-Classification-One Attribute			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
3 Dimensions-Color	1	35	14	
	2+3+4+5	17	4	0.29
3 Dimensions-Size	1	22	11	
	2+3+4+5	29	7	1.08
2 Dimensions-Size	1	24	8	
	2+3+4+5	21	7	0.09
2 Dimensions-Shape	1	27	7	
	2+3+4+5	16	5	0.00

(continued)

TABLE 8 (continued)

Item	Conceptualization-Classification-Two Attributes Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
4 Items	1	10	6	
	2+3+4+5	15	7	0.00
6 Items	1	14	7	
	2+3+4+5	7	4	0.05
Item	**Conceptualization-Single Classification** **Rating Scale Level***	**5-6 Special**	**7-8 Special**	**χ^{2}******
3 Dimensions-2 Classes	1	11	10	
	2+3+4+5	12	1	4.17
3 Dimensions-3+ Classes[1]	1	15	11	
	2+3+4+5	9	0	3.76
2 Dimensions-2 Classes	1	17	13	
	2+3+4+5	11	0	5.12
2 Dimensions-3+ Classes[1]	1	23	13	
	2+3+4+5	6	0	1.68
Item	**Conceptualization-Seriation-Size** **Rating Scale Level***	**5-6 Special**	**7-8 Special**	**χ^{2}******
3 Dimensions-3 Objects	1	13	13	
	2+3+4+5	27	8	3.74
3 Dimensions-4+ Objects[1]	1	22	13	
	2+3+4+5	17	6	0.35
2 Dimensions-3 Objects	1	18	15	
	2+3+4+5	16	5	1.73
2 Dimensions-4+ Objects[1]	1	15	15	
	2+3+4+5	18	5	3.30
Pictured Objects-3 Objects	1	19	11	
	2+3+4+5	16	5	0.45
Pictured Objects-4+ Objects[1]	1	15	11	
	2+3+4+5	18	4	2.20

TABLE 9

Frequency of Teachers' Responses to Items on Rating Forms for the Evaluation of Individual Children: Mastery of Task

Item	Gross Motor-Jumping			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Jumping with Locomotion	1	18	8	
	2+3+4+5	25	4	1.43
Jumping from a Height	1	21	10	
	2+3+4+5	22	2	3.24
Jumping Over an Obstacle	1	6	6	
	2+3+4+5	37	3	8.87
Rhythmical Jumping	1	5	6	
	2+3+4+5	38	7	5.51
Item	Gross Motor-Balancing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
On the Ground	1	19	6	
	2+3+4+5	25	2	1.62
On 4-Inch Side	1	14	6	
	2+3+4+5	31	4	1.83
Over Obstacles	1	5	3	
	2+3+4+5	32	7	0.57
Tilted	1	16	3	
	2+3+4+5	21	7	0.16
On 2-Inch Side	1	0	0	
	2+3+4+5	15	1	0.00

*See Appendix B for description of scale levels.

**χ^{2} .05 = 3.841

(continued)

TABLE 9 (continued)

Item	Gross Motor-Hopping Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Forward Locomotion	1	16	7	0.96
	2+3+4+5	31	6	
Over a Raised Obstacle	1	5	2	0.18
	2+3+4+5	37	6	

Item	Gross Motor-Throwing Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Stationary Position	1	16	7	0.08
	2+3+4+5	32	10	
Moving Position	1	13	3	0.09
	2+3+4+5	18	7	

Item	Gross Motor-Rhythmic Movement Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Stationary Objects	1	12	2	0.69
	2+3+4+5	16	0	
Rotary Objects	1	13	2	0.61
	2+3+4+5	16	0	

Item	Attention-Focusing Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Brief Exposure	1	27	10	0.00
	2+3+4+5	25	8	
Tracking	1	19	12	3.30
	2+3+4+5	31	6	

(continued)

TABLE 9 (continued)

Item	Attention-Immediate Recognition			
	Rating Scale Level*	5-6 Special	7-8 Special	X^{2**}
Slap-Jack	1	24	10	
	2+3+4+5	18	8	0.03
Hand Raising	1	22	13	
	2+3+4+5	16	4	1.04
Item	**Memory**			
	Rating Scale Level*	5-6 Special	7-8 Special	X^{2**}
Recall Beading-3-Dimensional Pattern	1	10	4	
	2+3+4+5	23	8	0.29
Recall Hole Punching-Sequence	1	8	9	
	2+3+4+5	14	2	4.38
Recall Cardboard Box-Location	1	10	5	
	2+3+4+5	29	10	0.05
Recall Forms and Pictures-Changed Location	1	6	4	
	2+3+4+5	19	6	0.28
Reproduction-Forms and Pictures	1	13	5	
	2+3+4+5	17	5	0.00
Item	**Visual Analysis**			
	Rating Scale Level*	5-6 Special	7-8 Special	X^{2**}
3 Dimensions-3 Objects	1	23	12	
	2+3+4+5	24	1	6.20
3 Dimensions-4+ Objects[1]	1	29	12	
	2+3+4+5	15	0	3.98
2 Dimensions-3 Objects-Pictures	1	29	17	
	2+3+4+5	12	0	4.62
2 Dimensions-4+ Objects[1]-Pictures	1	25	16	
	2+3+4+5	16	0	6.86
2 Dimensions-Printed Forms-3-5 Objects	1	22	19	
	2+3+4+5	17	3	4.45
2 Dimensions-Printed Forms-6+ Objects[1]	1	17	16	
	2+3+4+5	15	3	3.77

(continued)

[1] 3+ means 3 or more.
4+ means 4 or more.
6+ means 6 or more.

TABLE 9 (continued)

Item	Sensory Motor Integration-Body Awareness Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
General	1	37	17	
	2+3+4+5	14	1	2.57
Item	Sensory Motor Integration-Manipulation Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Beading	1	28	10	
	2+3+4+5	13	2	0.43
Pegboard-Simple Pattern	1	18	9	
	2+3+4+5	27	6	1.10
Pegboard-Complex Pattern	1	16	9	
	2+3+4+5	23	5	1.40
Item	Sensory Motor Integration-Manipulation Clothespin and Hole Punch Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Clothespins	1	26	6	
	2+3+4+5	17	0	2.10
Hole Punch-2 Holes	1	11	11	
	2+3+4+5	26	1	11.66
Hole Punch-3+ Holes[1]	1	5	12	
	2+3+4+5	31	1	22.58

(continued)

TABLE 9 (continued)

Item	Sensory Motor Integration-Channel Drawing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Chalkboard	1	21	8	
	2+3+4+5	21	0	5.00
Straight Line-1 Inch	1	36	13	
	2+3+4+5	9	0	1.74
Straight Line- Less than 1 Inch	1	24	11	
	2+3+4+5	21	2	2.92
Curve-1 Inch	1	31	13	
	2+3+4+5	14	0	3.77
Curve- Less than 1 Inch	1	22	10	
	2+3+4+5	23	3	2.17
Item	Sensory Motor Integration-Connecting Dots			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
1-Inch Intervals	1	30	11	
	2+3+4+5	16	3	0.38
2-Inch Intervals	1	36	10	
	2+3+4+5	10	3	0.08
6-Inch Intervals	1	30	12	
	2+3+4+5	15	2	1.07
Item	Conceptualization-Association			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
3 Pairs	1	36	14	
	2+3+4+5	10	0	2.26
6+ Pairs[1]	1	30	16	
	2+3+4+5	12	2	1.28

(continued)

TABLE 9 (continued)

Item	Conceptualization-Classification-One Attribute			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
3 Dimensions-Color	1	32	16	
	2+3+4+5	20	2	3.46
3 Dimensions-Size	1	26	15	
	2+3+4+5	25	3	4.51
2 Dimensions-Size	1	19	8	
	2+3+4+5	20	5	0.23
2 Dimensions-Shape	1	22	8	
	2+3+4+5	15	2	0.69
Item	Conceptualization-Classification-Two Attributes			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
4 Items	1	9	4	
	2+3+4+5	16	8	0.04
6 Items	1	10	8	
	2+3+4+5	11	3	0.97
Item	Conceptualization-Single Classification			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
3 Dimensions-2 Classes	1	11	11	
	2+3+4+5	12	0	6.73
3 Dimensions-3+ Classes[1]	1	13	11	
	2+3+4+5	12	0	5.91
2 Dimensions-2 Classes	1	19	13	
	2+3+4+5	9	0	3.64
2 Dimensions-3+ Classes[1]	1	21	12	
	2+3+4+5	9	1	1.43

(continued)

TABLE 9 (continued)

Item	Conceptualization-Seriation-Size			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
3 Dimensions-3 Objects	1	17	15	
	2+3+4+5	24	6	3.87
3 Dimensions-4+ Objects[1]	1	21	12	
	2+3+4+5	19	10	0.01
2 Dimensions-3 Objects	1	19	11	
	2+3+4+5	16	8	0.00
2 Dimensions-4+ Objects[1]	1	14	11	
	2+3+4+5	20	8	0.78
Pictured Objects-3 Objects	1	17	15	
	2+3+4+5	16	4	2.76
Pictured Objects-4+ Objects[1]	1	14	4	
	2+3+4+5	19	10	0.32

TABLE 10

Frequency of Teachers' Responses to Items on Rating Forms for the Evaluation of Individual Children: Ease of Manipulation

Item	Gross Motor-Rhythmic Movement			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Wire Whisk	1+2+3	22	2	
	4+5	5	0	0.09
Eggbeater	1+2+3	21	2	
	4+5	8	0	0.00
Item	Sensory Motor Integration-Body Awareness			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Tape	1+2+3	39	18	
	4+5	4	0	0.60
Item	Sensory Motor Integration-Manipulation			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Beading	1+2+3	35	11	
	4+5	6	1	0.01
Pegboard	1+2+3	34	13	
	4+5	11	2	0.30
Item	Sensory Motor Integration-Manipulation Clothespin and Hole Punch			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Clothespins	1+2+3	39	6	
	4+5	4	0	0.00
Hole Punch	1+2+3	11	12	
	4+5	25	1	12.25

(continued)

*See Appendix B for description of scale levels.
**χ^{2} .05 = 3.841

TABLE 10 (continued)

Item	Sensory Motor Integration-Channel Drawing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Chalk	1+2+3	38	8	
	4+5	3	0	0.00
China Marker on Acetate	1+2+3	42	14	
	4+5	4	0	0.28

Item	Sensory Motor Integration-Connecting Dots			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
China Marker on Acetate	1+2+3	37	14	
	4+5	9	0	1.87

Item	Conceptualization-Classification-One Attribute			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
Corks	1+2+3	52	18	
	4+5	1	0	0.33

Item	Conceptualization-Single Classification			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
3-Dimensional Objects	1+2+3	28	13	
	4+5	0	0	

Item	Conceptualization-Seriation-Size			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
3-Dimensional Objects-Bolts	1+2+3	35	21	
	4+5	6	1	0.63
Circles	1+2+3	27	19	
	4+5	10	0	4.54
Strips	1+2+3	22	18	
	4+5	11	1	3.89

TABLE 11

Frequency of Teachers' Responses to Items on Rating Forms for the Evaluation of Individual Children: Complexity and Quantity of Stimuli

Item	Sensory Motor Integration-Manipulation			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Beading	1+2	39	12	
	3	2	0	0.01
Pegboard-Simple Pattern	1+2	42	13	
	3	3	1	0.30
Pegboard-Complex Pattern	1+2	35	12	
	3	4	1	0.74
Item	Sensory Motor Integration-Manipulation Clothespin and Hole Punch			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Clothespins	1+2	43	9	
	3	0	0	
Hole Punch-2 Holes	1+2	27	12	
	3	3	0	0.22
Hole Punch-3+ Holes[1]	1+2	25	12	
	3	3	0	0.28

(continued)

*See Appendix B for description of scale levels.

**χ^{2} .05 = 3.841

[1] 3+ means 3 or more.
4+ means 4 or more.

TABLE 11 (continued)

Item	Sensory Motor Integration-Channel Drawing			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
Chalkboard	1+2	41	8	
	3	1	0	0.88
Straight Line-1 Inch	1+2	46	14	
	3	1	0	0.42
Straight Line- Less than 1 Inch	1+2	43	14	
	3	3	0	0.08
Curve-1 Inch	1+2	43	14	
	3	3	0	0.08
Curve-Less than 1 Inch	1+2	43	14	
	3	3	0	0.08
Item	Sensory Motor Integration-Connecting Dots			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
1-Inch Intervals	1+2	45	14	
	3	1	0	0.40
2-Inch Intervals	1+2	44	14	
	3	2	0	0.00
6-Inch Intervals	1+2	43	14	
	3	2	0	0.00

(continued)

TABLE 11 (continued)

Item	Conceptualization-Classification-One Attribute			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
3 Dimensions-Color	1+2	51	18	
	3	1	0	0.31
3 Dimensions-Size	1+2	39	15	
	3	2	0	0.00
2 Dimensions-Size	1+2	28	11	
	3	2	1	0.22
2 Dimensions-Shape	1+2	28	12	
	3	0	0	
Item	**Conceptualization-Single Classification**			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2}**
3 Dimensions-2 Classes	1+2	22	11	
	3	1	0	0.15
3 Dimensions-3+ Classes[1]	1+2	22	11	
	3	3	0	0.30
2 Dimensions-2 Classes	1+2	25	13	
	3	3	0	0.34
2 Dimensions-3+ Classes[1]	1+2	27	13	
	3	3	0	0.28

(continued)

TABLE 11 (continued)

Item	Conceptualization-Seriation-Size			
	Rating Scale Level*	5-6 Special	7-8 Special	χ^{2**}
3 Dimensions-3 Objects	1+2	39	19	
	3	2	2	0.02
3 Dimensions-4+ Objects[1]	1+2	39	21	
	3	1	1	0.10
2 Dimensions-3 Objects	1+2	33	19	
	3	1	0	0.09
2 Dimensions-4+ Objects[1]	1+2	31	18	
	3	2	1	0.25
Pictured Objects-3 Objects	1+2	30	19	
	3	3	0	0.54
Pictured Objects-4+ Objects[1]	1+2	26	18	
	3	7	1	1.29

TABLE 12

Mean Percentages of Ratings on Observation Schedules of Teacher-Child-Material Interaction: Interest

Test	5-6 Special		7-8 Special	
	Mean	S.D.	Mean	S.D.
Gross Motor-Jumping	.74	.23	.87	.12
Gross Motor-Balancing	.61	.28		
Gross Motor-Hopping	.74	.04		
Gross Motor-Throwing	.79	.26		
Gross Motor-Rhythmic Movement	.79	.25		
Attention-Focusing	.83	.16		
Attention-Immediate Recognition Memory	.77	.21	.86	.15
Visual Analysis			.90	.17
Sensory Motor Integration-Body Awareness			.91	.07
Sensory Motor Integration-Manipulation	.96	.04		
Sensory Motor Integration-Clothespin and Hole Punch				
Sensory Motor Integration-Channel Drawing	.93	.05	.88	.11
Sensory Motor Integration-Connecting Dots	.95	.05	.92	.14
Conceptualization-Association	.92	.12	.90	.08
Conceptualization-One Attribute	.78	.23		
Conceptualization-Two Attributes	.67	.27	.68	.07
Conceptualization-Single Classification				
Conceptualization-Seriation-Size	.88	.19	.96	.02

Where no percentage is reported, observers did not record a sufficient number of observations for analysis.

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TABLE 13

Mean Percentages of Ratings on Observation Schedules of Teacher-Child-Material Interaction: Sustained Interest-Positive

Test	5-6 Special		7-8 Special	
	Mean	S.D.	Mean	S.D.
Gross Motor-Jumping	.17	.21	.31	.19
Gross Motor-Balancing	.14	.21		
Gross Motor-Hopping	.18	.15		
Gross Motor-Throwing	.28	.23		
Gross Motor-Rhythmic Movement	.34	.25		
Attention-Focusing	.07	.08		
Attention-Immediate Recognition Memory	.37	.20	.24	.22
Visual Analysis			.19	.28
Sensory Motor Integration-Body Awareness			.23	.34
Sensory Motor Integration-Manipulation	.50	.22		
Sensory Motor Integration-Clothespin and Hole Punch				
Sensory Motor Integration-Channel Drawing	.38	.26	.40	.19
Sensory Motor Integration-Connecting Dots	.46	.23	.32	.16
Conceptualization-Association	.38	.29	.37	.31
Conceptualization-One Attribute	.44	.26		
Conceptualization-Two Attributes	.20	.07	.09	.06
Conceptualization-Single Classification				
Conceptualization-Seriation-Size	.38	.14	.46	.14

Where no percentage is reported, observers did not record a sufficient number of observations for analysis.

TABLE 14

Mean Percentages of Ratings on Observation Schedules of Teacher-Child-Material Interaction: Inattention

Test	5-6 Special		7-8 Special	
	Mean	S.D.	Mean	S.D.
Gross Motor-Jumping	.06	.17	.02	.04
Gross Motor-Balancing	.19	.29		
Gross Motor-Hopping	.03	.03		
Gross Motor-Throwing	.11	.24		
Gross Motor-Rhythmic Movement	.13	.20		
Attention-Focusing	.03	.07		
Attention-Immediate Recognition Memory	.14	.20	.01	.01
Visual Analysis			.03	.05
Sensory Motor Integration-Body Awareness			.03	.05
Sensory Motor Integration-Manipulation	.02	.02		
Sensory Motor Integration-Clothespin and Hole Punch				
Sensory Motor Integration-Channel Drawing	.01	.01	.01	.01
Sensory Motor Integration-Connecting Dots	.01	.02		
Conceptualization-Association	.03	.08	.01	.02
Conceptualization-One Attribute	.11	.22		
Conceptualization-Two Attributes	.14	.25	.02	.03
Conceptualization-Single Classification				
Conceptualization-Seriation-Size	.07	.16		

Where no percentage is reported, observers did not record a sufficient number of observations for analysis.

TABLE 15

Frequency of Observers' Responses to Items on Observers' General Rating Form: Attention

Test	Rating Scale Level*	5-6 Special	7-8 Special
Gross Motor-Jumping	1+2	4	1
	3	10	5
Gross Motor-Balancing	1+2	4	1
	3	2	1
Gross Motor-Hopping	1+2	3	0
	3	2	0
Gross Motor-Throwing	1+2	3	1
	3	5	2
Gross Motor-Rhythmic Movement	1+2	4	0
	3	4	0
Attention-Focusing	1+2	4	2
	3	11	2
Attention-Immediate Recognition	1+2		
	3		
Memory-Beading	1+2	5	3
	3	10	4
Memory-Hole Punch	1+2	1	2
	3	3	1
Memory-Box Tops	1+2	3	0
	3	8	3

(continued)

Where no frequencies are reported, observers did not record behavior for that activity.

*See Appendix C for description of scale levels.

TABLE 15 (continued)

Test	Rating Scale Level*	5-6 Special	7-8 Special
Memory-Recall and Reproduction	1+2	4	3
	3	9	4
Visual Analysis-3 Dimensions	1+2	0	1
	3	4	4
Visual Analysis-2 Dimensions	1+2	0	1
	3	7	3
Visual Analysis-Booklets	1+2	1	0
	3	5	8
Sensory Motor Integration-Body Awareness	1+2	0	0
	3	3	5
Sensory Motor Integration-Beading	1+2	2	0
	3	3	2
Sensory Motor Integration-Pegboard	1+2	1	2
	3	11	4
Sensory Motor Integration-Clothespin and Hole Punch	1+2		
	3		
Sensory Motor Integration-Channel Drawing	1+2	4	2
	3	13	6
Sensory Motor Integration-Connecting Dots	1+2	1	2
	3	22	6

(continued)

TABLE 15 (continued)

Test	Rating Scale Level*	5-6 Special	7-8 Special
Conceptualization-Association	1+2	5	0
	3	14	5
Conceptualization-One Attribute-Corks	1+2	1	0
	3	6	1
Conceptualization-One Attribute-Color Forms	1+2	1	0
	3	6	1
Conceptualization-Two Attributes	1+2	3	4
	3	6	0
Conceptualization-Single Classification-3 Dimensions	1+2		
	3		
Conceptualization-Single Classification-2 Dimensions	1+2		
	3		
Conceptualization-Seriation-Size-3 Dimensions	1+2	4	1
	3	17	6
Conceptualization-Seriation-Size-2 Dimensions	1+2	2	2
	3	15	4
Conceptualization-Seriation-Size-Pictures	1+2	1	2
	3	7	6

TABLE 16

Frequency of Observers' Responses to Items on Observers' General Rating Form: Demonstration

Test	Rating Scale Level*	5-6 Special	7-8 Special
Gross Motor-Jumping	1+2	12	4
	3	3	2
Gross Motor-Balancing	1+2		
	3		
Gross Motor-Hopping	1+2	3	0
	3	0	0
Gross Motor-Throwing	1+2	5	1
	3	3	2
Gross Motor- Rhythmic Movement	1+2	7	0
	3	0	0
Attention-Focusing	1+2	7	2
	3	8	2
Attention- Immediate Recognition	1+2		
	3		
Memory-Beading	1+2	12	4
	3	3	3
Memory-Hole Punch	1+2	2	1
	3	2	2
Memory-Box Tops	1+2	6	0
	3	5	3

(continued)

Where no frequencies are reported, observers did not record behavior for that activity.
*See Appendix C for description of scale levels.

TABLE 16 (continued)

Test	Rating Scale Level*	5-6 Special	7-8 Special
Memory-Recall and Reproduction	1+2	9	5
	3	4	2
Visual Analysis-3 Dimensions	1+2	3	1
	3	1	4
Visual Analysis-2 Dimensions	1+2	2	1
	3	6	3
Visual Analysis-Booklets	1+2	2	1
	3	4	7
Sensory Motor Integration-Body Awareness	1+2	1	3
	3	2	2
Sensory Motor Integration-Beading	1+2	4	0
	3	1	2
Sensory Motor Integration-Pegboard	1+2	4	2
	3	8	4
Sensory Motor Integration-Clothespin and Hole Punch	1+2		
	3		
Sensory Motor Integration-Channel Drawing	1+2	9	1
	3	8	7
Sensory Motor Integration-Connecting Dots	1+2	9	2
	3	13	5

(continued)

TABLE 16 (continued)

Test	Rating Scale Level*	5-6 Special	7-8 Special
Conceptualization-Association	1+2	10	2
	3	9	4
Conceptualization-One Attribute-Corks	1+2	4	0
	3	3	1
Conceptualization-One Attribute-Color Forms	1+2	4	0
	3	3	1
Conceptualization-Two Attributes	1+2	6	2
	3	3	3
Conceptualization-Single Classification-3 Dimensions	1+2	3	1
	3	0	1
Conceptualization-Single Classification-2 Dimensions	1+2	0	0
	3	0	1
Conceptualization-Seriation-Size-3 Dimensions	1+2	11	1
	3	10	6
Conceptualization-Seriation-Size-2 Dimensions	1+2	10	2
	3	7	4
Conceptualization-Seriation-Size-Pictures	1+2	2	3
	3	6	5

TABLE 17

Frequency of Observers' Responses to Items on Observers' General Rating Form: Manipulation

Test	Rating Scale Level*	5-6 Special	7-8 Special
Attention-Focusing	1+2	1	1
	3	14	3
Attention-Immediate Recognition	1+2		
	3		
Memory-Beading	1+2	2	0
	3	13	6
Memory-Hole Punching	1+2	4	1
	3	1	2
Memory-Box Tops	1+2	0	0
	3	11	3
Memory-Recall and Reproduction	1+2	0	0
	3	13	7
Visual Analysis-3 Dimensions	1+2	0	0
	3	4	5
Visual Analysis-2 Dimensions	1+2	2	0
	3	6	4
Visual Analysis-Booklets	1+2	2	1
	3	4	7
Sensory Motor Integration-Body Awareness	1+2	0	1
	3	3	4
Sensory Motor Integration-Beading	1+2	1	0
	3	4	2
Sensory Motor Integration-Pegboard	1+2	8	4
	3	4	2

(continued)

Where no frequencies are reported, observers did not record behavior for that activity.
*See Appendix C for description of scale levels.

TABLE 17 (continued)

Test	Rating Scale Level*	5-6 Special	7-8 Special
Sensory Motor Integration-Clothespin and Hole Punch	1+2		
	3		
Sensory Motor Integration-Channel Drawing	1+2	8	3
	3	8	5
Sensory Motor Integration-Connecting Dots	1+2	9	3
	3	14	4
Conceptualization-Association	1+2	0	0
	3	19	5
Conceptualization-One Attribute-Corks	1+2	0	0
	3	7	1
Conceptualization-One Attribute-Color Forms	1+2	0	0
	3	7	1
Conceptualization-Two Attributes	1+2	0	0
	3	9	5
Conceptualization-Single Classification-3 Dimensions	1+2	0	0
	3	3	2
Conceptualization-Single Classification-2 Dimensions	1+2	0	0
	3	0	1
Conceptualization-Seriation-Size-3 Dimensions	1+2	2	0
	3	19	7
Conceptualization-Seriation-Size-2 Dimensions	1+2	3	2
	3	14	4
Conceptualization-Seriation-Size-Pictures	1+2	0	0
	3	8	8

TABLE 18

Correlations Between Teachers' Evaluations and Observers' Recordings

Item	Title of Activity												
	Gross Motor	Attention	Memory	Visual Analysis	Beading and Pegboard		Sensory Motor Integration		Conceptualization				
											Seriation-Size		
	Jumping	Focusing			Total	Pegboard	Channel Drawing	Connecting Dots	Association	One Attribute	Total	A+B 3 Dimensions	C+D 2 Dimensions
Interest	.51	.05	.87	-.48	.64	.68	-.14	.59	.47	.78	.88	.87	.72

TABLE 19

Means and Standard Deviations of Scores
Obtained by Special and Typical 3- Through 4-Year-Olds on
CREED 3 Test Battery

Test	Special N=6		Typical N=6	
	Mean	S.D.	Mean	S.D.
Gross Motor	1.67	.94	3.17	1.07
VMI	3.17	1.07	4.50	2.93
Knox Cubes	1.67	.94	4.50	3.30
Association Test	3.17	3.02	5.12	2.48
Form Copying	12.33	5.62	8.17	6.72
Visual Discrimination	3.67	1.80	4.50	1.12
Sequencing	2.17	1.67	3.83	1.67
Color Cubes	4.67	2.21	6.00	.00
Shell Game	1.33	.94	1.50	.96

TABLE 20

Means and Standard Deviations of Scores
Obtained by Special and Typical 5- Through 6-Year-Olds on
CREED 3 Test Battery

Test	Special N=6		Typical N=6	
	Mean	S.D.	Mean	S.D.
Gross Motor	3.21	1.96	3.96	1.79
VMI	5.58	2.16	6.58	1.82
Knox Cubes	4.32	3.36	5.83	3.16
Association Test	5.82	2.80	7.08	2.23
Form Copying	7.58	4.86	5.88	3.73
Visual Discrimination	5.26	3.16	6.79	2.38
Sequencing	4.21	3.55	6.38	4.65
Target Test	4.18	2.98	6.54	2.48
PSS	3.87	2.53	4.67	2.43
Connecting Dots	2.22	2.29	3.21	2.40
Gibson Transformations # Correct	5.00	4.43	11.21	4.95
Gibson Transformations # Incorrect	8.63	14.13	24.00	28.54
Seriation	3.45	3.39	5.71	3.77

TABLE 21

Means and Standard Deviations of Scores Obtained
by Special 7- Through 8-Year-Olds on
CREED 3 Test Battery

Test	N=40	
	Mean	S.D.
Gross Motor	5.28	1.82
VMI	8.65	1.30
Knox Cubes	8.15	3.09
Association Test	8.52	.77
Form Copying	2.18	2.17
Visual Discrimination	7.05	2.54
Sequencing	10.22	6.16
Target Test	8.40	1.58
PSS	6.10	2.20
Connecting Dots	5.90	2.22
Gibson Transformations # Correct	13.00	4.32
Gibson Transformations # Incorrect	10.75	7.46
Seriation	6.80	3.63

Chapter IV

Discussion and Recommendations

A. Bases for Program Modification

Typically, the discussion section of a project report presents the results as they confirm or do not confirm the project proposals. This project, however, is developmental, and the evaluation to which it was subjected was designed to provide future direction for that development. As stated above, the CREED 4 staff presented participating teachers with a "preliminary proposal" for their modification and elaboration. While the professional training of the CREED staff is in research, they are concerned that their work be of real value to educators; thus, the staff attempted to develop techniques that would reflect both objective measurement and educational utility. These techniques were, in fact, designed for the purposes of modification, not confirmation. These evaluations will be considered, therefore, from the standpoint of the modifications that they may generate.

As stated in the preceding chapters, the staff considered the following variables of greatest importance to both teacher and child in the development of a program for remediation of the skill deficits indicated by the CREED 3 Test Battery:

1. interest
2. level of mastery
3. validity of sequence
4. relevance
5. practicality

In addition, it was decided that change in these variables as

a function of increasing age of the child was of equal importance.

Before we consider the analyses, we must remind the reader that the limitations upon the statistical analyses of the objective measures as described in Chapter III dictate that these findings be considered indicative rather than definitive.

1. Interest

On the basis of the result of both objective and subjective evaluations of the materials and activities on this variable, only minor modifications are required. The data from the observers and teachers corroborate the findings of high interest level for most of the tasks. Apparently, the materials met with both teacher and child approval. Of course, it is equally apparent that a "Hawthorne effect" is introduced, i.e., the children are perhaps the recipients of much greater attention on a one-to-one basis than heretofore. Individual attention increases the interesr of most children. Indeed, one teacher state quite candidly that the most valuable aspect of the program was the opportunity it presented for studying the child as an individual. Thus, the materials may be of unusual interest or the interest may be only a fortunate concomitant of the individualization of instruction. We believe strongly that it is a measure of both.

2. Level of mastery

3. Validity of sequence

As stated in the introduction, the development

of a sequence of skills of increasing levels of difficulty presents a number of problems to the designer. Among such problems the most serious is the fact that the human brain can devise an incredible number of paths to the same goal behavior. Thus, when one designs a sequence of difficulty levels, it is not necessarily, the only sequence appropriate for a particular child. Nevertheless, because we are working with children who have had problems in succeeding with any sequence of difficulty, we feel somewhat better justified in devising one for presentation to the teacher, based upon an amalgamation of developmental theorists, observational findings and practical considerations. Optimal help would have been offered the teacher, if several possible sequences were described through such procedures; in the time period afforded, we were quite fortunate to devise one.

The Rating Scale variables that should provide us with information about the reality of the sequential levels designed are Amount of Demonstration and Level of Mastery. If the ratings indicated that repeated demonstrations were necessary in order to communicate the elements of the task, and that many repeated trials were necessary for completion of the task, we would consider that task at a relatively high level of difficulty. On the other hand, one demonstration and one trial would indicate a relatively simple task.

There seemed to be four patterns of responses to the materials. In the first, on about 20% of the activities,

the older group found the task easier to accomplish than the younger group. There was, then, some indication that the task reflected differentiation based upon increases in age.

In the second, in about 10% of the total, both age groups mastered the tasks. Thus, these tasks failed to differentiate between these age groups. The indications in this instance are that the task was set at a level of difficulty appropriate to a child at a young age. Because we did not obtain a sufficiently large number of 3- through 4-year-olds for the project, we could not determine if, indeed, the level of differentiation was between the 3- through 4-year-olds and the 5- through 6-year-olds.

The third pattern reflected a very high level of difficulty so that all children failed to master the task, regardless of age. It is appropriately set at a higher age level.

The fourth pattern is one in which there is a similar distribution of children within the 5- through 6-year-old group and the 7- through 8-year-old group who fail and succeed at the task. Such a result may indicate the presence of several significant factors, including the possibility that the task is a transitional one that is mastered throughout the 5- through 8-year age range. Quite possibly, these tasks would have been mastered by the greater majority of 9- through 10-year-olds.

The implications of these results are clear: where all 5- through 8-year-olds failed tasks, we must interpolate tasks at

a less complex level. Where all mastered the tasks, the ceiling level of difficulty for task accomplishment must be increased. Where the task accomplishment was distributed similarly across both age groups, a wider range of tasks must be structured so that specific points of differentiation within this four-year age range may be determined.

These modifications are strongly recommended on the basis of objective measures and the interpretation of Teachers' Comments. Optimal utilization of these data would dictate that we expand the structure of skills in the current program.

4. Relevance

5. Practicality

The teachers' ratings of the materials and their comments indicated that they perceive the need for the more definitive bridging of tasks through the specific requirements of academic subjects. For example, there was the frequent suggestion that the Visual Analysis and Sensory-Motor Integration tasks be extended to require introduction to the alphabet, to graphemes and to words. Thus, while the teachers accept most readily the need to aid children in the mastery of the underlying components of pre-academic skills, they recommend strongly that the program include among its objectives the articulation of the structures of pre-academic skills with the structures of academic skills, such as reading and writing.

There is in such a recommendation the recognition of the need for continuity in programs of skill development from the earliest phases to culminating tasks of great complexity, such

as reading. There is also the comprehension of the inter-dependence of the skill areas in tasks at high levels of complexity.

In the majority, the materials were rated well on practicality; there was, however, great consistency in the negative cases. Where there were negative comments, the teachers contributed very precise recommendations for modification of the task materials or suggested materials for development of the skill in question. Participating teachers provided ideas for the modification of current materials as well as ideas for new materials in order to increase the usefulness of the program in the classroom.

6. Summary

It should have become evident from the above discussion that these variables cannot be considered in isolation; they are highly interpendent. In order to make any worthwhile change in a particular activity in the program, it will be necessary for the CREED staff to consider the activity in light of all variables upon which it has been measured. There is a wealth of information available for decision-making, from many sources, for all tasks; the decisions will thus reflect an attempt to effect a balance among these sources. The CREED 4 staff believes that only through such processes can we make heuristic decisions in the development of curriculum.

B. Implications from the Processes of Evaluation

The tasks in the CREED 4 program were subjected to several

types of evaluation, including both ratings and narrative reports from participating teachers. Such a comprehensive design was dictated by the type of information being sought, viz., the extent of differentiation by age of discrete program tasks.

While the teachers' narrative reports could be expected to indicate age differences, realistic modification cannot be based upon individual descriptions. There must be some indication of need on the part of a large proportion of those involved. It is the belief of the CREED 4 staff that objective measurement is the most acceptable way to obtain a stable description of such need. This measurement provides strong justification for changes effected on the basis of the subjective recommendations in the narrative reports.

As discussed above, the analyses of the ratings obtained from the teachers clearly indicated the direction of modification. The Teachers' Comments were a confirmation of the ratings. It must be asserted, however, that CREED 4 personnel view both sources as absolutely essential to the appropriate evaluation of a program. The Teachers' Comments provided not only confirmation, but elaboration of the dynamic processes within the instructional situation. To interpret one without the presence of the other provided only a fraction of the information necessary for the development of a program.

C. Teachers as Objective Evaluators

Because we were treating so complex an aspect of curriculum design, it was decided by the staff that data from neutral

observers would contribute greater objectivity to the sources of information. The analyses of the observation schedules obtained from the observers produced results of some interest. Apparently, the evaluations produced by the sample of teachers in this project were highly related to the recordings of the neutral observers of the classroom situation. The implications are, that for such a sample of teachers, there is the firm possibility that we can expect a realistic evaluation of the program on the basis of their ratings alone. For researchers, this is a most provocative statement. While educators may consider it naive, it will doubtless cause some disturbance on the part of sceptical educational researchers. Admittedly, the results are open to other interpretations, but the one we pose here can not be lightly disregarded. It will certainly be among the considerations of the CREED staff when future procedures of evaluation are proposed.

D. The Place of CREED 4 in the Education of the Young Deaf Child

We have described the CREED 4 program in this report as sequences of activities to aid children in moving from one level of functioning in a skill to another. Our efforts have been directed toward helping teachers meet the needs of children who demonstrate learning problems in the five skill areas of gross motor coordination, sensory-motor integration, attention and memory, visual analysis and conceptualization. At this point in the project we have directed our efforts toward the development of the content of such remediation processes. We believe that we have provided the teacher with elements from

which we may select those appropriate to the problems demonstrated by an individual child; in other words, we have provided input for the instructional process. We have not, at this time, considered the process through which this input is to be communicated. We avoided such consideration because it was not within the scope of the task set before us. We feel compelled to inform the reader, however, that while we have not considered it here, the CREED 4 staff is very much concerned about the environment in which the child is expected to accomplish the tasks in the CREED 4 program. We are concerned with the inter-personal dynamics within which the tasks are communicated, and the expectations for their accomplishment on the part of both the teacher and the child. These are aspects of learning that cannot be avoided in the development of a program. We have moved ahead without direct attention to them only because we viewed the sequence of tasks at this point as possible of implementation within <u>any</u> environment. In other words, we believe that it is possible to implement the elements in this program so that they are appropriate to both the individual needs of the child and the individual styles of the teacher. As educational researchers working in curriculum development, however, we are very much aware of the current movement in general education for significant change in the learner's environment (Silberman, 1970; Featherstone, 1969). The process of re-evaluation is appearing in the literature in special education as well (Lilly, 1970). It is the hope of the CREED 4 staff that such re-evaluation on the part of educators of the deaf will be reflected in future developments in the education of the deaf child.

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APPENDIX A

List of Activities

LIST OF ACTIVITIES

GROSS MOTOR

Jumping

A. Jumping with Locomotion

B. Jumping from a Height

C. Jumping over an Obstacle

D. Rhythmical Jumping

Hopping

A. Forward Locomotion

B. Over a Raised Obstacle

Balancing (Balance Beam)

A. On the Ground

B. On 4-Inch Side

C. Over Obstacles

D. Tilted

E. On 2-Inch Side

Throwing

A. Stationary Position

B. Moving Position

Rhythmic Movement

A. Stationary Objects

B. Rotary Objects

ATTENTION

Focusing

A. Brief Exposure

B. Tracking

Immediate Recognition

A. Slap-Jack

B. Hand Raising

MEMORY

A. Recall Beading-
3-Dimensional Pattern

B. Recall Hole Punch-
Sequence

C. Recall Cardboard Box-
Location

D-E. Recall Forms and Pictures-
Changed Location

F-G. Reproduction-
Forms and Pictures

VISUAL ANALYSIS

A. 3 Dimensions-3 Objects

B. 3 Dimensions-
4 or More Objects

C. 2 Dimensions (Pictures)-
3 Objects

D. 2 Dimensions (Pictures)-
4 or More Objects

E. 2 Dimensions (Printed Forms)-
3-5 Objects

F. 2 Dimensions (Printed Forms)-
6 or More Objects

SENSORY MOTOR INTEGRATION

Body Awareness-General

Manipulation-Beading and Pegboard

A. Beading

B. Pegboard (Simple Pattern)

C. Pegboard (Complex Pattern)

Manipulation-
Clothespin and Hole Punch

A. Clothespin

B. Hole Punch-2 Holes

C. Hole Punch-3 or More Holes

Channel Drawing

A. Chalkboard

B. Straight Line-1-Inch

C. Straight Line-
Less than 1-Inch

D. Curve- 1-Inch

E. Curve-Less than 1-Inch

Connecting Dots

A. 1-Inch Intervals

B. 2-Inch Intervals

C. 6-Inch Intervals

CONCEPTUALIZATION

Association

A. 3 Pairs

B. 6 or More Pairs

CONCEPTUALIZATION (continued)

Classification-One Attribute

A. 3 Dimensions-Color

B. 3 Dimensions-Size

C. 2 Dimensions-Size

D. 2 Dimensions-Shape

Classification-Two Attributes

A. 4 Items

B. 6 Items

Single Classification

A. 3 Dimensions-2 Classes

B. 3 Dimensions-3 or More Classes

C. 2 Dimensions-2 Classes

D. 2 Dimensions-3 or More Classes

Seriation-Size

A. 3 Dimensions-3 Objects

B. 3 Dimensions-4 or More Objects

C. 2 Dimensions-3 Objects

D. 2 Dimensions-4 or More Objects

E. Pictured Objects-3 Objects

F. Pictured Objects-4 or More Objects

Seriation-Number

A. Beading-3 Beads

B. Beading-4 or More Beads

C. Color Form-3 Forms

D. Color Form-4 or More Forms

E. Picture-3 Pictures

F. Picture-4 or More Pictures

APPENDIX B

Teacher Evaluation Forms

EVALUATION OF CHILD

I. Interest:

A. Beading
B. Pegboard (Simple pattern)
C. Pegboard (Complex pattern)

SCORING:
1 = always watches
2 = watches almost all of the time
3 = watches about half time
4 = rarely watches
5 = pays no attention

II. Amount of Demonstrating Required:

A. Beading
B. Pegboard (simple pattern)
C. Pegboard (complex pattern)

SCORING:
1 = got idea immediately
2 = needed 2 repetitions
3 = needed 3 repetitions
4 = more than 3 repeats - understood
5 = more than 3 repeats - did not understand

III. Mastery of Tasks:

A. Beading
B. Pegboard (simple pattern)
C. Pegboard (complex pattern)

SCORING:
1 = completed on first trial
2 = needed 2 trials to complete
3 = needed 3 trials to complete
4 = more than 3 trials but completed
5 = more than 3 trials - did not complete

IV. Evaluation of Sustained Interest (when child works without direction)

A. Beading
B. Pegboard (simple pattern)
C. Pegboard (complex pattern)

SCORING:
1 = constantly works on task
2 = works most of the time
3 = works about half the time
4 = works very little
5 = does not work on task

V. Ease of Manipulation:

A. Beading
B. Pegboard

SCORING:
1 = no difficulty in manipulation
2 = little difficulty in manipulation
3 = some difficulty
4 = very difficult but succeeds
5 = unable to manipulate

VI. Reaction to Quantity of Stimuli:

A. Beading
B. Pegboard (simple pattern)
C. Pegboard (complex pattern)

SCORING:
1 = not disturbed/distracted by number of stimuli
2 = some disturbance/distraction by number of stimuli
3 = very disturbed/distracted by number of stimuli

CREED EVALUATION FORM

NAME OF STUDENT							
IA							SENSORY MOTOR INTEGRATION - MANIPULATION
IB							
IC							
IIA							
IIB							
IIC							
IIIA							
IIIB							
IIIC							
IVA							
IVB							
IVC							
VA							
VB							
VIA							
VIB							
VIC							

TEACHER EVALUATION OF MATERIALS

A. Difficulty in Communicating Task Instructions:

BEADING

Very easy to explain	Often difficult to explain	Not able to get idea across

PEGBOARD (Simple Pattern)

Very easy to explain	Often difficult to explain	Not able to get idea across

PEGBOARD (Complex Pattern)

Very easy to explain	Often difficult to explain	Not able to get idea across

B. Relevance to Class Objectives:

Highly related to class obj.	Some relation to class obj.	No relation to class. obj.

C. Level of Interest to Teacher:

Very Interesting	Interesting	Lacking in Interest

D. Reaction to Amount of Items Included in Section:

Too many repetitive items included	Sufficient items are included	Needs more items

E. Amount of Time Required to Carry out the Entire Sequence:

Less than 5 minutes	5 - 10 minutes	10 - 20 minutes	20 - 30 minutes	More than ½ hour

F. Ease of Manipulating Materials by Teacher:

Very easy	Somewhat difficult	Very hard

G. Maintaining Materials:

Materials remained intact throughout	Some items misplaced or damaged	Most items misplaced or damaged

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H. Storage:

No difficulty in storing	Some difficulty in storing	Very difficult to store

APPENDIX C

Observer Evaluation Forms

OBSERVER RATING SCALES

CHILD ACTIVITY WITH TEACHER

A. Child does not attend to teacher
B. Child watches teacher (includes watching hands, etc. while she demonstrates; passive)
C. Child "talks to" teacher (active interaction; not just passive repeats of teacher's words; includes non-verbal actions)

CHILD ACTIVITY WITH MATERIALS

1. Child does not attend to materials
2. Child looks at materials
3. Child manipulates materials (includes touching for play as well as execution of task)

TEACHER ACTIVITY

O. Teacher attends to others and other things (anything extraneous to task)
W. Teacher watches child
D. Teacher demonstrates materials

OBSERVER SCORING SHEET CREED 4

Student's Name _____ Class _____ Initial Presentation ☐

Materials _____ School _____ Subsequent Presentation ☐

Date _____ Age _____ Observer _____ In Classroom ☐ Other _____

Minutes	1	2	3	4	5	6	7	8	9	10	11	12
0 - 2												
2 - 4												
4 - 6												
6 - 8												
8 - 10												

I. Attention:

(1)	(2)	(3)
always watches	watches about half time	pays no attention

II. Amount of Demonstrating by Teacher: (beyond first presentation)

only initial demonstration	needed some repetitions	needed many repetitions

III. Ease of Manipulation:

no difficulty in manipulation	some difficulty	very difficult to manipulate

Comments